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Description of Varieties of Grapes

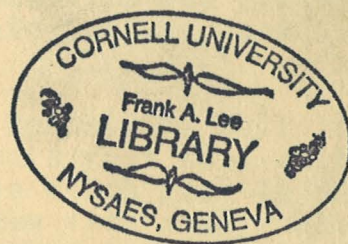
— taken from —

("Traite General de Viticulture")

AMPELOGRAPHIE

Published under the direction of (P.
Viala & V. Vermorel,) assisted
by many others. Vol. VI.

Paris, 1903.



Volume VI. Page 178.

CONCORD.

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HISTORY & GEOGRAPHICAL AREA.- In 1840 Mr Ephraim W. Bull lived in Concord, Massachusettss. During the autumn of this year some children had gone to gather the fruit from the wild vines which grew in the woods on the banks of the Concord River, a small stream with sandy banks, where wild roots of the vitis labrusca were growing in numbers. In passing the house of Mr Bull they gave him some of these fruits to taste which appeared to be unusually good for the fruit of wild vines. Mr Bull was so pleased by the quality of this fruit that he gathered some seeds and planted them. In 1843 one of these seedlings fruited, the fruit appearing to be of a superior quality. He again gathered and

planted seeds of this vine and one of these seeds of the second generation produced a vine which bore fruit in 1849. Besides this plant one other seedling was saved which was later named Cottage. It proved to be inferior to the first mentioned in that the berries dropped from the bunch at the time of ripening. It has never been cultivated.

The Concord thus produced by seedage became known to the public for the first time in 1853. by its exhibition at the Massachusetts Horticultural Society meeting where *****

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it attracted much attention as a native variety. Soon after it was propagated extensively by cuttings and spread rapidly through all of the northern part of the United States east of the Rocky Mountains, where it is cultivated more extensively than any other variety. Its popularity is caused by the size of the fruit, its great productiveness, and also because for the greater part, Americans have a marked liking for the foxy taste which is so accentuated in this variety, but people who are accustomed to grapes free from foxiness, and particular to those of really good quality, do not consider that the foxy class derived from vitis labrusca have any merit for eating. In the southern part of the United States the Concord has never been as successful as in the north. ~~It is injured by the hot and dry weather and in this section its fruit~~ ^{fulness & quality is} ~~qualifies as~~ inferior.

The Concord was introduced into France at the beginning of the phylloxera crisis. Its great renown in the United States had attracted the attention of the French vine growers and nurserymen who were seeking to restore wine growing by the use of American vines. They propagated them in Herault and Gard upon a large scale. This was the first American vine propagated and was some time previous to the use of American vines for stock. It was this variety also which was first found to be a failure in France before 1875. Its resistance to the phylloxera is very slight, and its resistance to chlorosis is practically nil. It has succeeded well ~~in~~ only in the arduous-silicious and flinty soils of the Alpine diluvium where certain plantations on new land have continued to bear more than twenty years but the phylloxera has finished by having possession. In the dry and poor soils of the French wine districts the Concord was annihilated by the insect before the third or fourth year; in calcareous soils the chlorosis in ^{even} combination ^{without} with the phylloxera destroyed this variety often by the second or third year. In France the Concord exists today only as a fact here and there in varietal collections.

The Concord represents a pure type of the vitis labrusca without any mixture. The foxy taste, the large seeds without chalaza or rappha, in place of which are two clear and distinct depressions, the

continuous tendrils, the true pubescence upon the under surface of the leaves, the pulpy flesh, the large berries, are all specific characters strongly indicative of this species. One must admit, however, that in examining Concord seedlings one may find slight traces of *Vitis riparia* blood. The Concord has produced, either by pure seedlings or by hybridization, a number of new varieties. The best of the pure seedlings are Moore's Early, Worden and Mc-Pike of the black, and Martha and Pocklington of the white. Of the hybrids, among the best are Triumph, Black Eagle, Concord Muscat, Moore's Diamond, Niagara, Brighton, Beacon, etc.

CULTURE-In the western part of New York State and in Ohio, upon the shore of Lake Erie, the Concord is the chief variety in all their large vineyards. Thousands of hectares are planted of this variety alone, and the fruit is shipped to be used for table grapes all over the region east of the Rocky Mountains. In Ohio and New York they also make red wine by the addition of sugar to the must. Concord grapes are also used for the making of sparkling wines.

180 Concord, as well as other varieties of the *labrusca*, and other hybrids, is best adapted to the rich, new, sandy soils which are common in this section. The calcareous chalk soils produce chlorosis; the dry soils where rocks predominate, induce phylloxera. It is these causes which render the culture of the Concord impossible in the South.

The Concord is given the same system of planting and culture as other varieties, both *vinifera* and native. The vineyard is planted on land stirred to a considerable depth in rows eight feet apart with the vines eight feet apart in the row (this would make about two thousand vines per hectare). The vines are trained on a wire trellis with posts about twenty feet apart. The posts at the end of the row are very firmly braced so as to support the weight of the wire. The lower wire is two feet from the ground, a second wire twelve to sixteen inches from the first, the third an equal distance from the second. In the best system of training an upright cane is conducted to the top wire, and horizontal canes running from this main cane are tied along this wire. Similar canes are tied to the wire below, the length of these canes depending on the vigor of the vine. In the winter pruning these canes running along the wire are cut off where they join the main stem. Other canes which have formed the previous season are shortened and fastened to the wire in the place of those removed. This system of training the vine is known in the United States under the name of the Kniffin renewal. Many grape growers leave off the lower wire altogether.

Another system of training, superior to the last for vineyards of large extent, is known under the name of the Munson system of training. In this system the posts are about five feet high, and at the top there is a cross-piece (about two feet long), fastened solidly to the post in the center and extending at right angles to the rows. The posts are put twenty-four feet apart with the end post very strongly braced to resist the weight of the wire. No. 11 galvanized iron wire is stretched through holes made in each end of these cross-pieces and also one through the post itself about six inches below where the cross-pieces are attached. There are thus three parallel wires, two at the same height, five feet high a foot from the row, and one six inches lower directly in the row. The main cane is carried first to the lower or central wire and extends along this wire, the distance depending upon the vigor of the vine. Side shoots, which bear the fruit, are supported by the wire on either side; the canes running along the side are arranged each year. The advantage of this system is that the cradle of foliage thus produced acts as a protection to the fruit from the hot sun. This is very advantageous during the hot summers in the United States. This system is superior to all other methods of training American vines.

The cultural care of the Concord, like that of other American vines, consists in frequent tillage and light applications of manure, both to be repeated every year.

181 The Concord is very resistant to the mildew, to the oidium, and to the anthracnose, but it is, on the other hand, very susceptible to the black rot, which is combated by using the Bordeaux mixture. Its resistance to the phylloxera and to the effects of an excess of alkali in the soil is, like those of all the labrusca, very slight. The fruit is not easily affected by late frosts and it keeps well on the vine. The buds burst rather late in the spring and there is little danger of late frosts.

The Concord is a very productive variety, giving best results when pruned rather long. In France it is less productive than the Othello. It is more distinctly American than the latter. The French have generally abandoned its culture on account of its susceptibility to black rot and to the effect of the hot sun. Its pulpy fruit gives a must which tests from 60 to 75 by the scale; thus one is obliged to add sugar for the manufacture of red wine in order to attain, as is customary, 10% or 11% of alcohol. The foxy taste of the fruit is also found very strong in the red wine. It is less marked but exists in the white wine which is used as a base for champagne. But the Concord is above all the table grape of the northern states. The foxy taste pleases more than anything else the American palate. Enormous quantities are

consumed every year and this is the principal reason for the extension which has taken place in the culture of this variety. During the last few years the juice of the Concord, hermetically sealed in bottles, has been put upon the market for use as a summer drink and for different culinary purposes.

DESCRIPTION.- Vine vigorous, of loose open appearance, canes thick. Bark loosens in long irregular ribbons. Roots fleshy, thick and strong.

Buds stout, obtuse, of a deep carmine with rather abundant reddish down. Bud scales much compressed, broad and thick. The young carmine leaves for a long time covered with very abundant tomentum, on the under surface as white as snow, on the upper surface of golden yellow; on the outer edges of the upper surface they are of carmine color like the leaf itself. The young leaves come out early. The young flower buds are covered with a light down of a yellowish green with the summit tinted with a dirty red.

Canes long and somewhat slender, slightly sinuous, cylindrical, of a clear green, with a rather thick cobwebby tomentum, which is rather rusty when in the herbaceous state. Surface rough caused by the breaking of the slight bristles or tomentum, of a deep hazel, with grooves showing very plainly in late summer. Internodes rather long, - 6 cm. to 12 cm. - depending upon the vigor; striations regular but rather shallow. Nodes slightly pronounced. Diaphragm of one tenth of an inch in thickness, tendrils continuous (type of the labrusca), slender, divided, covered with a light rusty down.

Leaves large (about 15 cm. X 15 cm.) entire, orbicular, angle between the petiole and the leaf wide and deep; upper lobes are characterized by long indentations and the terminal lobe by a lanceolate obtuseness. Leaves thick, smooth, or slightly rough; upper side of a deep green and slightly repand, the lower surface covered with a true tomentum which is thick and of a milky white; veins large and prominent, very slightly pubescent, with two series of shallow teeth, one being acuminate and the other rather obtuse; petiole rather long, strong, and of a clear purple color in parts forming an obtuse angle with the leaf. Leaves fall late in the fall and at that time of a dirty brownish yellow.

P.182 FRUIT.- Bunches medium size, cylindrico-conical, often shouldered, and with a long lobe; stem rather short, of medium size, tender, of a clear green color; pedicels very short, slightly thickened and flattened, with excrescences; that portion of the stem inside the berry is rather long and colorless and slightly adhering to the seeds - berries spherical, not compact, of regular and medium size, considerable bloom, of a deep violet black color on the outside and colorless in the interior; skin rather thick, elastic, separating readily from the pulp; flesh pulpy, juice pink, of a foxy taste, particularly so under the skin; two to four

seeds on the average, of swollen heart shape, of clear bronze color, chalaza and raphe replaced by two depressions of slight depth.

T. V. MUNSON.

IVES.

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BIBLIOGRAPHY.-- See Bibliography of the Concord.

SYNONYMS.-- Ives Seedling, Ives' Seedling, Ives' Seedling, Ives Seedling Madeira, Ives Madeira, Kittredge.

OBSERVATIONS.-- The Ives is a pure labrusca variety which has been known in the United States since 1865 when A. Waring and Dr Kittredge raised the first vine. It had extended quite widely by 1868 in the state of Ohio where the Catawba had given only disappointment. Its early bearing qualities and its being a black grape were the principal causes of its extension aided by relatively good qualities in its wine for American tastes. It became popular in all the Northern Atlantic States and is cultivated more or less to the northern border of Texas. It is not as highly esteemed today as it has been formerly and in most districts its culture has been abandoned for a number of years.

The origin of the Ives is a much disputed point. Upon this subject the Bushberg Catalog, a standard grape publication, says that it is a seedling of the Hartford. Its originator, Henry Ives, left a manuscript which we have and which gives a curious account of the origin of this variety. Ives claimed to have planted seeds in 1840 of the Malaga and that the Ives came as one of these seedlings. In 1844 he exhibited the variety before the Cincinnati Horticultural Society. However, the Ives is a pure labrusca and could not possibly come from pure vinifera. At the time when Mr Ives raised these seedlings, the Alexander or Cape grape, which had been found growing wild in the woods of Pennsylvania, was with the Catawba, Clinton and Norton Virginia the only native variety cultivated. The Cape grape was much cultivated in Cincinnati for the production of wine of a better quality and less alcoholic than that which can be made from the Ives. The Cape grape, judging from the vine and fruit, is a very probable parent of the Ives. My opinion is that a seed of the Alexander was accidentally mixed with the seeds of the Malaga above mentioned, and that the only seedling which grew to be a vine, as Mr Ives says, was from this pure labrusca variety, a supposition which is corroborated by all characters of the Ives. ~~On~~ On account of its vigor, its productiveness and its hardiness the Ives became rapidly popular both as a wine and as a table grape, but I think that its introduction was unfortunate for American grape growing for one of the characteristics of this variety makes it a very bad table grape. This characteristic is that it attains its full color and appears to be ripe about two weeks before it is really mature. It is consequently placed upon the market and many persons, attracted by its fine color, buy the fruit to their ultimate disappointment. The Ives thus kills the market just at the moment when better varieties are coming in.

The Ives ripens a little earlier than the Concord. It makes a harsh, foxy wine which keeps better than the Concord wine, and is much improved by age. But as other varieties are better for wine making than the Ives, and the Ives is not of value as a table grape, its cultural importance is diminishing more and more and there is no probability of its becoming a predominant variety in any of the grape sections of the North, although it still retains an important place in vineyards where the fruit is used for the making of sparkling wines.

The methods of culture of the Ives are the same as those of the Concord, as is also the pruning. It is quite resistant to the black rot and other fungous diseases and on this account is favored by the growers.

The Ives possesses in a marked degree the specific characters of the *vitis labrusca* and, like the Concord, the same faults of susceptibility to calcareous chlorosis and phylloxera.

DESCRIPTION- Vine vigorous, of spreading habit. Canes of medium thickness or rather slender, bark separating in narrow irregular strips.

Buds large, pointed, covered with rather a heavy brownish down, rose colored at the time of the appearance of the young leaves and at the extremity of the glandular teeth; young foliage trilobed, thick and shiny, covered on the under surface with very numerous white silky hairs; upper surface with scattering yellow hairs with a slight cottony tomentum.

CANES- Long, strong, sinuous, rough on account of the persistence of the rather numerous coarse hairs, has reddish white wooly down, rather dense on the young shoots, falling off as the cane becomes older. The canes take a clear green before autumn with here and there a brownish tint. Internodes short, cylindrical, with rather large and well indicated striations, cylindrical, nodes enlarged, diaphragm thick, bi-concave. Tendrils (or bunches) continuous, large, short, bifurcated and sometimes trifurcated; occasional patches of light flecks of rose colored down.

Leaves large, slightly longer than wide (12 cent. 1/2), trilobed, but with rather shallow lateral sinus; petiolar sinus deep, slightly open, blade of leaf slightly blistered, rather thick, veins large and prominent on the under side; teeth large, very obtuse, rather deep, upper surface of a bright green color with scattering cobwebby hairs with a thick cottony tomentum; under surface of yellowish white on the parenchyma, scattering bunches of hairs on the veins. Petiole long, strong, enlarged at the end with rather dense wooly clear rose color down in patches; forming a right angle with the plane of the leaf.

FRUIT-Bunch growing often to the number of three to five in succession on every cane, medium or below in size, cylindrical, long, loose, rarely shouldered; peduncle short, slender, small and hard at the point of insertion, of a dirty green, with

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light patches of cobwebby hairs. Pedicels rather long and large, green, irregular swellings and warty-like projections numerous. Berries separating readily from the stem, leaving a wine colored pencil brush like piece at the point of former insertion. Berry medium in size or with an occasional small green berry on the bunch, sub-globular in shape, bloom rather abundant; of a deep black color which is peculiar on account of its coming before maturity; colorless in the interior. Stigma persistent at the center of the slightly depressed umbilicus. Skin thick but elastic, under which is attached the very adherent coloring matter; pulp fleshy, juice of a rosy wine color and of a very foxy flavor to which is added at maturity a slight odor. Seeds very adherent to the flesh, from two to four seeds medium large and of specific labrusca character in that the chalaza and raphe are absent, being replaced by two slight grooves.

T. V. MUNSON.

DELAWARE.

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BIBLIOGRAPHY.- See Concord.

SYNONYMS.- Delaware Grape. Gray Delaware. Rose Colored Delaware.

HISTORY AND ORIGIN.- Delaware is a variety of table grape which is most highly esteemed and cultivated in the United States. Its fruit brings the highest price on the market in the states north and east and it is everywhere cultivated for the manufacture of white dry wines. It is cultivated as extensively as the Concord. It is a very important variety in the vineyards of the north particularly in the states of New York, Ohio, Pennsylvania, and in fact all over the border of the Great Lakes. It is also quite commonly cultivated in Missouri and Arkansas.

The Delaware grape was found in 1850 in a garden which had been planted by P. H. Provost at Frenchtown, Hunterdon County, New Jersey. The introducer, not having any information as to the origin of this variety, it has remained unknown. It is nevertheless possible, we believe, to deduce its probable origin from its botanical characters. M. Millardet and several other authors hold that the Delaware is a hybrid between *vitis vinifera*, *vitis labrusca* and *vitis aestivalis*; others believe the Delaware to have originated from a union of *vitis vinifera*, *vitis labrusca* or *vitis labrusca* or *vitis riparia vulpina* or even *vitis labrusca* and *vitis aestivalis*.

These hypotheses do not appear to us to be justified. We have investigated the history of many American varieties known under the name of *Aestivalis* of the South. First we wish to call attention to the fact that M. Provost had come from Switzerland to New Jersey bringing with him many European varieties of grapes. The Delaware does not resemble any of the European vines and it perhaps does not resemble any pure species indigenous to America. A botanical study of the Delaware carried through many years and with numerous seedlings and hybrids of this variety has enabled us to demonstrate that its parents are certainly *vitis labrusca* and *vitis bourquiniana* (formerly classified by Engelmann in the *aestivalis* of the south, and which in my opinion constitutes a separate species which I consider fixed in type. *Herbemont* is an illustration of this type), and probably *vitis vinifera*, but there is no trace of the influence of the *vitis riparia* (*vitis vulpina*) or of *vitis aestivalis* (the *aestivalis* of the North of Engelmann).

Two varieties, the *Elsinberg* and the *Catawba*, appear to have been cultivated in the regions where M. Provost lived. I have made comparative studies of these varieties. The *Elsinberg* is very closely related to the *Herbemont*, a pure *bourquiniana*. It became known for the first time in *Elsinberg* (Salem County, New Jersey) during the beginning of the nineteenth century. The *Elsinberg* neighborhood, which gave its name to this variety, is situated close to the Dela-

ware River about 150 miles from Frenchtown on the same river. Before the construction of railroads, at the time of M. Provost's voyages up and down this river were frequent. it is very probable that some of the valuable varieties which were then cultivated in that region, such as the Elsinberg and the Catawba, had been distributed in all the cultivated sections up and down the two banks of this river. The Elsinberg has many characteristics in common with the Delaware. Its foliage resembles that of the Delaware in size; the leaves are also three or ~~five~~ lobed of the same bright clear green color which is so characteristic of the bourquiniana. The leaves of the Elsinberg, however, are less pubescent on the under side than those of the Delaware while those of the Catawba are more pubescent. The fruit of the Elsinberg is a very little smaller than that of the Delaware and has the same habit of early bearing; the color is similar as is also the very sweet colorless juice. No one knows the origin of Elsinberg but it certainly belongs to the same group as Herbemont (vitis bourquiniana ?) and probably has been imported (at least this is my opinion) by the first emigrants that came in to America. The foliage of the Elsinberg is susceptible to the mildew as is that of the Delaware but not to such an extent as that of the Delaware or the Catawba. It is known that seedlings of the Catawba often resemble the Delaware very much excepting in the foliage. The numerous seedlings which I have raised of the Delaware (not hybrids), have always revealed the respective species which I have indicated.

M. A. Thompson, of Delaware, Ohio, who first cultivated the Delaware, which he secured from the garden of Provost, called the attention of the public to this variety in 1855. Mr G. W. Campbell commenced his important cultivation of this variety between 1860 and 1866 and gave it the name of the Delaware in honor of the town of that name.

CULTURE.- The Delaware rapidly became popular and was soon considered the standard of quality in American table grapes and is today considered as such in all portions of the eastern part of the United States.

The Delaware has the one serious fault that it is very susceptible to mildew which frequently defoliates it in August in Texas. The crop is thus lost if one does not combat the mildew with Bordeaux mixture. It is very resistant to the black rot and to the root rot (pourridae?). It has a certain amount of resistance to the phylloxera greater than that of the labrusca species in general (10 to 20 in the scale of resistance), and thrives very well in the new limestone soils of the north where there are comparatively few phylloxera.

The system of pruning and establishing a vineyard is described under Concord applies with equal strength to the Delaware with this difference that the canes should be only six or seven feet (^{long} 1 m = 80/100 to 2 m = 10/100) instead of eight feet (2 m = 50/100). It differs from the Concord in that it is necessary to prune short. The soils to which it is best adapted are those which are rich, deep, well ^{drained} and warm.

An eastern exposure is advisable in the northern states and almost necessary in those of the south.

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As we have said above, the Delaware is above all the table grape preferred east of the Rocky Mountains. It is cultivated upon a very large scale even in the Southern States. It is an early bearing variety which brings the highest price on the market. Its only fault is that it is not more productive and that it frequently gives less profit than other more productive varieties.

Few of the hybrids or seedlings of the Delaware equal their parent. They are often white grapes, more often rose colored, never black, and very variable in their characters resembling always, nevertheless, the *Vitis labrusca*, *Vitis Bourquiniana*, and *Vitis vinifera*. Many crosses of the Delaware have been made with Concord, as for instance, Nectar (Delaware X Concord), a black grape sometimes known as Black Delaware, originated by A. G. Caywood, at Marlboro in the state of New York. It is of high quality but its wine is very inferior. I have obtained many hybrids of the Delaware crossed with other hybrids or with pure species. Some of these are without merit. The best are Atoka and Merica-del resulting from a cross of America and Delaware, and Brilliant Hidalgo, Xenia, combinations of Delaware and Rogers No. 9 (Lindley), and No. 1 (Goethe). We cite also the Kalista and Saccharissa obtained by J. Sacksteder of Louisville, Ky, which are considered to be a white Delaware.

The White Delaware has been propagated considerably in America and introduced into France. It is a seedling of Pink Delaware. Its productiveness is perhaps inferior to that of the Delaware proper and its vigor is also slight. It can be distinguished by its more upright habit and by the character of the leaves. There are almost entire, the sinus being hardly deep enough to indicate the lobes. The sinus of the petiole opens widely and the upper surface of the leaf is of a glossy green and not ternate. The bunches are rather small, the berries much compressed.

DESCRIPTION- Vine slightly vigorous, of slightly spreading habit; stock slender, bark separating in fine irregular ribbons.

Buds small, conical, short, of reddish brown color when expanding, retaining a tint of very deep red. When mature the young leaves have three lobes and the glands of the margin are of a reddish brown. Upper surface glossy with a few scattering hairs under surface with abundant rusty down upon the veins. The clusters of flowers appear early and are rose colored at the summit.

Cane slightly elongated, cylindrical, smooth, slender, lateral canes rather numerous, of a clear green color washed with dull purple in places in late summer changing to a deep mahogany color. Very dark at the nodes and flattened and slightly enlarged; internodes rather short; numerous fine striations, diaphragm thin,

bi-concave, tendrils not continuous, slender, short bifurcated and of a dirty reddish yellow.

Leaves medium or small in size, slightly broader than long (4 X 5 inches), trilobed, superior lobe, that is at the end of the leaf, with deep sinus and a lanceolate point. The two inferior sinuses very shallow. The angle of the petiole and leaf slightly opened. Leaf rather thin; veins slightly depressed, numerous indistinct, netted; two series of obtuse teeth, rather shallow and sometimes acuminate, upper surface of a color rather deep green, under surface with patches of wooly hairs scattered along the ribs; petiole medium length, rather strong, enlarged at point of insertion, washed in violet purple in places and forming a very obtuse angle with the blade of the leaf.

FRUIT.- Bunch below medium in size, regular cylindrical or cylindro-conic, simple or sometimes strongly shouldered, peduncle rather long, slender, green, hard, at the point of insertion; pedicel medium length, rather large and flattened at point of insertion; rather large wart-like excrescences of a dirty green with a large, long pencil brush attached to pedicel when fruit is removed. Berries compact, subspherical, or almost oval, sometimes with green berries at the end of the bunch below medium or small in size, of a rather deep rose-violet pink color, clear and semi-transparent, colorless inside. Stigma central, distinct. Skin rather thin, firm; flesh slightly pulpy, juice of pale rose color, sweet, slightly foxy, Seeds one to three, rather large and showing the labrusca characters.

T. V. MUNSON.

HERBEMONT.

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SYNONYMS.- Warren, Warenton, Herbemont's Madeira, Niel Grape, Neal Grape(Downing). Devereux, Thurmond(Phin). Neal(Thomas). Brown French(Bourquin). Bottsi(?)(Child). McKee(Bush et Meissner).

257 HISTORY AND GEOGRAPHICAL AREA.- The origin of the Herbemont is very obscure. Nicholas Herbemont, about the end of the eighteenth century, noticed this vine growing at the home of Judge Huger in Columbia, S.C. He was so struck with its vigor and productiveness *** that he commenced to propagate it and gave it his name. He regarded it at the time as an almost pure aestivalis variety of which he had seen some vines growing wild in the woods of Warren County. ^P Later, in 1834, many trustworthy people affirmed that this variety had originally come from Europe, either France or Madeira. M. Bourquin, of Savannah, Georgia, made laudable efforts to solve this problem and as the result of his researches presents a hypothesis which deserves favorable consideration. One of M. Bourquin's ancestors who had cultivated grapes in South Carolina more than 150 years previously to the time of this narrative had imported from Europe two vines. One of these which was called Brown French Grape was recognized by T. V. Munson to be the Herbemont. Herbemont was produced directly according to the deductions of Millardet, who is our authority in the matter, as a hybrid of aestivalis crossed with vinifera and cineria. It is not possible that this crossing occurred in America since the Herbemont had been known in Southern Texas (from which it ^{spread} into the rest of the country) for more than a century, that is to say before they had in that section any varieties of European origin. On the other hand it is said that there were very early importations of American vines into Madeira. If this is correct, the accidental hybridization would have been quite possible in the Madeira vineyards between the native and the American varieties and the hybrids resulting from these natural crosses would quite easily have been introduced into the southern portion of the United States by emigrants.

In support of this opinion Munson states that there still exists in the South of Europe varieties which are evidently seedlings of the same crosses. In support of this he shows that seeds of the true Herbemont are of a form very similar to a supposed Herbemont received by him in a shipment from Valencia, Spain.

This solution of Bourquin and Munson clears up the obscure origin of the Herbemont and explains how the Herbemont may very easily have vinifera blood. If historical documents are lacking to support their ingenious hypotheses, it at least is in strict accordance with the conclusions of Millardet.

In the southern portion of the United States the Herbemont ^{holds} keeps the same prominent position in grape culture that the Concord does in the northern portion of the same country. Its culture is profitable in Texas, Georgia, Virginia, South Carolina, Florida and Louisiana.

In Texas it constitutes the most of their vineyards but further north in Missouri it is not raised because it will not stand the winters unprotected. To be grown it must be covered every autumn.

The area to which this variety is adapted is limited in America as it is in Europe both by climate and soil. It is indeed rather fastidious in its choice of both. It is cultivated most successfully, we are told, in fertile gravelly red soils which are well drained which are warm at the surface and which have considerable organic matter *in the subsoil*. Such soils are not very common in the vineyard districts of France, consequently Herbemont ^{holds} only a restricted area.

It was tried first in Languedoc and Provence with varying results generally unsuccessful. It is establishing itself slowly in the southwest where the conditions demanded by this variety seem to be fulfilled. The section referred to is the rich soils of Lot-et-Garonne, of Gironde, and of Charents, where the variety continues to be cultivated with profit. *****

go 258 Its late season has prevented its partisans from introducing it north of Lyons. It is well that this is true, for the very cold winters to which it would there be exposed would freeze it to the ground. I refer to such winters as were experienced in the Rhone District in 1879 and 1880 by M. Gillarde, *of* Brignais. The late ripening season of this variety which was a serious fault in France becomes in Bresil an advantage, for the fruit is retarded sufficiently to bring the wine making season for this variety after the rainy periods. Dr. Barrett says that one should plant this variety on a large scale in calcareous districts where chlorosis does not extend rapidly. ~~This horror of~~ This horror of calcareous soils, which seems to be a peculiarity of the cineria and the aestivalis, has limited its use as stock. And since the cuttings do not grow well and the wood is too hard for it to split as it should, and its resistance to phylloxera is medium, it is not a favorite with propagators, consequently Herbemont is rapidly giving place for such purposes to other American varieties which are superior for these purposes.

In so far as its direct production is concerned (not grafted), the healthy vine above ground recommends its extensive culture and it should particularly recommend itself during years of poor prices, ^{at least} in certain portions of the southwest. It was one of the first American varieties introduced but the great hopes of its introducers have not been completely *fulfilled*. It may play the same part in the southwest that the Jacquez has done in the southeast. The Jacquez has been tremendously popular. ~~P~~ Since this time many selections have been made with a view of improving its productiveness. To a degree this has been successful in the interesting seedlings of Aurelles, Touzan, etc., which should have the earnest attention of grape growers of Gironde and Charents, and above all in the country about Folle Blanche, Cognac and Armagnac where red wine is rare, where, indeed, it is ~~so~~ difficult to

for blending
secure, that the Herbemont should become popular, particularly in the extensive plains some distance from the limestone hills. Where it is made into white wine it passes the still and makes very good brandy resembling that from the Folle. Where the must is fermented with the husks it makes the wine maker a good red wine either for his personal use or for the market.

To sum up this variety, the whole of its good qualities tend to increase the present culture and importance of the Herbemont and induce one to think that it may replace the Othello which has failed on all sides. But the tenderness of this variety combined with its late season of ripening, would prevent its being raised in the central districts of France where it has given only disappointment.

COMPARATIVE DESCRIPTION.- "The Herbemont," says Pulliat "by its characters appears to belong to the aestivalis group which are distinguished by their strong shoots usually erect, of a lead color at the ends, by relatively large leaves, and very light tomentum, and particularly by having more berries on the bunch than other American varieties, the berries being very slightly pulpy and having no foxy flavor. It belongs to the Southern Aestivalis, ~~xxxxxxx~~; an artificial group created by Engelmann which includes varieties quite different from one another. T. V. Munson has taken some of the elements of this group to form his Bourquinia family dedicated to Bourquin who had made a study of the principal members Herbemont and Jacquez. Pierre Viala has logically subdivided this group, putting in one class those varieties with lobed leaves ^{slightly shouldered} and bunches such as the Herbemont and Jacquez, and in the other class those with entire leaves ^{strongly shouldered and} compact bunches such as the Cunningham and Black July.

259 Since the observations of Millardet the consensus of opinion seems to be that the Herbemont is a hybrid of the aestivalis x cineria x vinifera with the aestivalis predominating; the cineria and vinifera external characters showing very slightly. One recognizes the influence of the vinifera in ameliorating the harshness which is apparent in wine and brandy made from the aestivalis and most of the hybrids and one may also credit to this vinifera influence the susceptibility to the phylloxera which the fleshy root system indicates.

In the synonyms the greater part of the names are allusions to the places where the variety was supposed to have originated or where it was first cultivated, such as the reference to the forests of Warren County in the name Warren and its supposed origin on the island of Madeira in the name Madeira. All of these names apply to the same variety, although the Warren cultivated at the Montpellier school shows in its foliage a more open sinus and the serrations on the margin of the leaf are more sharp pointed, slight differences from the true Herbemont type. The Bottsi is given by Bush & Meissner on the authority of their countryman Child as being the same as the Herbemont, Bottsi being a name given to this variety in Natchez, Mississippi, to which place it

was said to have been brought from South Carolina fifty years before, but after having compared it with the Herbemont they found the fruit to be more or less of a deep pink color, never black, and with a great susceptibility to moldew, characters which prevent it being cultivated profitably. In these respects it differs from the Herbemont, although it resembles that variety closely enough to be a seedling of it in all other respects.

Harwood, Dun's Grape, Pauline, and Muskogee, pass for varieties of the Herbemont. We are without interest in the matter but we cannot accept this. In France where large numbers of seedlings of the Herbemont have been raised they have been found to be more fruitful than these varieties. It is therefore advisable to distinguish carefully between them.

(Paragraph left out).

At the Lyons Pomological Exhibition of September, 1887, Pulliat presented seedlings of the Herbemont which he had originated in 1870 by hybridizing with Blue Portuguese; this was named the Herbemont-Pulliat. (Description not translated). Other Herbemont seedlings are Herbemont d'Aurelles, Herbemont Touzan, and several others.

(Two pages left out as unimportant).

Page 261 CULTURE- The cultivation of the Herbemont is limited by three factors, first, its adaptation to the soil in which it is very exacting; second, its adaptation to climate, it requiring a very warm climate; third, by the fact that its resistance to the phylloxera is so slight that it must be kept growing vigorously in order to overcome this disease. In the United States, Bush and Meissner give this variety as specially adapted to limestone hills. This appears significant owing to the fact that the Aestivalis in its wild state occurs almost wholly in the old granitic, silurian, devonian, and cambrian soils, where there is sufficient vegetable matter to keep them warm. According to Viala the Herbemont is cultivated in America in rich, fertilized soils, or in the red gravelly soils which are rich and open up enough to warm up readily. Experience with this variety in France has been similar, as will be found in the transactions of the Congress of Montpellier in 1881. At this meeting its tendency toward calcareous chlorosis was assigned to M. Verneuil for Charente, to M. Breheret for Drome, and to Dr. Barateaux for Bresil. It was said that in Var in the deep alluvial soil at the home of Dr Richet this variety had been particularly successful and it was there more vigorous than the Jacquez. In the southwest where there are still many large vineyards it was found to be successful. The soils there are of a clayey and sandy nature, deep, with some iron but no lime. This absence of lime gives a longer life to the Herbemont variety.

The Duchess of Fitz James has combated the idea of writers on American vines that drouth and poor soil is necessary in order that the Herbemont may be fruitful and mature its fruit properly. This is probably a matter of climate and isothermal lines, for in the St Benezet

Region it is in the alluvial soils that they show themselves most prolific. This variety has been proclaimed to be resistant to drouth in Canargue by M. Reich and also Planchon, who have counseled the planting of these varieties on the hills. It is well to guard against accepting this counsel too literally. It is always wise to avoid thin soils which are too dry. Hybrids of the Herbemont have done very well in the Causses du Lot but the apparent aridity of these poor uplands is very deceptive to the eye because the underlying loam, which is composed of a hard, almost insoluble limestone, contains pockets filled with a non calcareous feruginous clay. In these pockets the roots penetrate deeply and are themselves able to resist drouth and phylloxera. It is on account of these vines having adapted themselves to this region in this manner that they have secured the reputation of furnishing a hardy and disease resisting stock, an opinion which is not merited. The propagation of the Herbemont by means of cuttings, as with most of the *aestivalis*, is very difficult to do in the open air and without special care. As the result of a wide experience in propagating them Berckmans of Georgia states that only about six per cent. of the cuttings will strike root. Millardet, in a dry soil, often with watering, secured only three per cent. Lalanne in a moist limestone clay soil with a clayey subsoil, secured twenty-five per cent, and Gaston Bazille in a deeply trenched meadow in Lottas, secured sixty-six per cent. The success secured in this last case which was ascertained and commented on by Millardet, is very exceptional, and is inserted here only to show the complexity of the conditions which govern the rooting of Herbemont in the open air. The American grape growers habitually propagate the Herbemont by means of layers. Although this variety grows very poorly from cuttings, it is very easily grafted, and grafting the *vinifera* with the Herbemont for stock is seldom disappointing. Some grape growers, however, have complained that the canes are apt to split too far under the knife; others state that this variety when used as a stock induces in the variety used as a cion the same late ripening period and even a little of the color peculiar to the stock. It is hardly worth while to make the investigation necessary to find if all of these complaints are well founded, for it seems to us if the Herbemont variety on its own roots is to be confined to a limited section, as seems to be the case, it will never be used for a stock. It is above all necessary to add that hybrids of all sorts, either between new American species or between American and French species, shall be first of a wide adaptability, and second, have great resistance to the phylloxera.

The Herbemont is listed at 12 in its capacity to resist phylloxera. This is sufficient to its cultivation in certain fruit sections, but is not enough to make it advisable for all places. This resistance, while only moderate, is quite well defined. This was mentioned in 1876 by M. Oberlin, who published his views in the studies on Phylloxera by Baumann and Bollwiller. When it was first imported into France there was much enthusiasm over its production and its lack of resistance to phylloxera was not suspected. Even Planchon, Millardet, Pulliat, and others no less competent had suspected this, however. In 1879, nevertheless,

Dr Sorrell was disturbed to see the Herbemont *****
page 263 failing somewhat. The piths in the canes had become black. He mentioned to the lecturers on American vines what he had noticed and his secret fears. Dr. Davin added the finishing touch by stating that he had found phylloxera attacking this variety. Furthermore he added, "Will someone show me a Herbemont that has continued to grow for five years." To this excessive pessimism Planchon answered by showing the vineyards of M. Gaston Bazille at Beric.

When Bordeaux, the director of the Suis field stated in 1886 that the Herbemont was not as vigorous as it had been when first raised in that section, he did not feel justified in saying that this was due to the attacks of the phylloxera but preferred to credit it to the previous season which had been very unfavorable, but one can see that his personal opinion is inclined to credit the phylloxera as the true cause. There is nothing more surprising than in finding that in those places where the soil and the weather conditions are such that the Herbemont is not enabled to withstand the phylloxera it does poorly and, on the other hand, where the conditions are such as to enable this variety to defend itself against this insect, it becomes more and more vigorous as the vines get older.

Recently M. Verneuil has communicated to me the following opinion which is similar to that of others. He says: "I had planted the Herbemont in a rather deep, sandy clay soil in 1884 and grafted it in 1885 to Folle Blanche. In 1893 it was a very dry year. They appeared feeble. The roots were covered with numerous nodules and the ends of all the roots were rotten. Believing them dead I wished to replace them. The rows were two meters and 30/100 apart. I fertilized the soil very heavily and dug it up with a garden fork between the depth of 45/100 of a meter and then planted between every row of Herbemont a row of riparia with a row of Folle Blanche grafted thereon, but the Herbemont have taken on a new lease of life and the grafted riparia grew so poorly that at the end of a year I pulled them out. They were literally smothered by the Herbemont which today, after twenty-one years are doing finely in spite of the phylloxera. The conclusion which one must draw is that the Herbemont has such a resistance to the phylloxera when it is planted in a deep soil of moderate fertility and in such a climate as they have at Charente or anywhere else that the same conditions are found," but its regain of health appears to us to be due less to its resistance to the phylloxera than to its general health; In this respect it is quite superior to its first cousin the Jacquez. Almost immune to the mildew and black rot it resists the oidium and in spite of the fears of Berckmans, who had announced its deplorable susceptibility to the black rot in America, it resists the anthracnose also. The second buds are fruitful. Planchet announced this

fact after the frost of 1879. These desirable qualities, added to a regular bearing habit, which is not equaled by any of the provincial varieties, and in which respect it approaches the fruitfulness of the vines of the southwest and with a quality of fruit acceptable to the market at least in the form of brandy, has enabled the Herbemont to hold its own until ^{the} present time. Its culture therefore merits some attention.

264 Besides the advantages which we have enumerated, the culture of the Herbemont is not without some inconveniences. Its lack of hardiness, late ripening season, and fact that its wood is not always ripened up at the time when the fruit is, prevent it succeeding in the north. In the south it is not always without faults either. Dr. Gauthier of Nice mentions the dropping off of the berries which in some years reduces the crop very much. The pruning which suits this variety best, as indeed it does most of the American vines where they are ungrafted, is a long pruning on the cordon system. The Guyot, either simple or double, is always satisfactory. The number and length of the canes to be left should depend on the vigor of the vine. We have seen the Herbemont pruned short in goblet shape which gave satisfaction but generally the great vigor of this vine demands a certain leaf surface which it is only easy to obtain in plantations where the rows are well apart and the soil rich. Meissner says that we should not neglect the summer pruning. This does not appear to us necessary. Where the vines are trained upon a single low wire on which are tied the fruiting canes, the Herbemont, where planted at two meters, will shade all the ground and effectually prevent the growth of weeds; it usually does better trained thus than when it is pruned too much.

It should give at least sixty or seventy hektoliters per hektar. Although grapes of this variety run lightly in the Languedoc, its product is considered satisfactory in Gironde and Charente. In America Downing has stated that one of the synonyms of this variety is Bags of Wine, but in France any such name would appear an exaggeration; nevertheless, its culture is so simple that the revenue from a hektar of Herbemont in the southwest is even greater than a hektar of grafted varieties.

WINE MAKING.- The fruit of the Herbemont is late in ripening. M. Ganzin is said to have harvested his crop on the 9th of October in Var. It is rather nice tasting and in the market is esteemed quite highly as a table grape.

According to Meissner the must of this variety, when pressed and fermented without the husks, makes a white wine resembling the dry Rhine wines. If allowed to remain for forty-eight hours in the vats with the husks before being separated it becomes a very pleasant pale red wine which resembles Madeira according to Husmann. M. Leenhardt, in his report to the Montpellier Congress of 1874, speaks thus of the White Herbemont wine: "A good tasting, pleasant,

light colored wine, without any sediment." At the same Congress M. Foex reported on a sample of red wine exhibited by M. Laliman of Bordeaux: "Wine red, of very beautiful color, very good, and of good flavor. It has no particular flavor to distinguish it from wines made under the same condition from French varieties. In 1877 Planchon was so well satisfied of its value that he stated that it deserved to be called the most promising American variety. In the month of November in 1883 the Gironde Agricultural Society held an exposition for the wines of hybrid varieties. Samples of the Herbemont wine made by Messrs. Piola, Laliman, Gachassin-Lafitte and Sursol made a good impression upon the judges. In this connection M. Piola writes a short time later: "The Herbemont furnishes us of the central and western districts a slightly colored rather dry wine of very good taste. It approaches nearer the type of our ordinary varieties in Gironde than any other of the American varieties. M. Delestrac of Vaucluse says that the wines grow better from this variety as the vines get older. The Duchess of Fitz James states that the late ripening season gives it a chance to become sweeter and thus increase the quantity of alcohol in the wine without taking on a foxy taste. In Gard, wine made from this variety is smooth like trame and similar in appearance. It is known on the Paris market under the name of Montagne. Durand the scientist, who wrote Vites Boreali-Americanae, found the Herbemont wine made in America good, of a pink or clear red color, resembling in flavor the Manzanilla of Spain. It is probable that it resembles the Manzanilla more than the Montagne for it is not a favorite on the market.

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In Charente, when made into a red wine, it has a fair demand for local consumption by the working people who, accustomed to a country where white and copper colored wine predominate, prefer this for a red wine. "Also" writes M. Verneuil, "the small purchasers, who chiefly raise the Herbemont more often sell the wine at home than the wine of Folle Blanche." The market which accepts White Herbemont willingly to be made into brandy, will not accept the same wine when it is made red.

Camille Saint-Pierre has published in 1877 several analyses of the musts of American grapes from which we copy the analyses of numerous samples of Herbemont.

		Areometric degree		
Source of Sample	Date of Vintage	of Must.	Remarks.	
M. Boileau of Castel-	Sept. 11.	10.6	-----	
nau,				
M. Vincent of Perie,	" 15.	12.	2 yr. old grafts on	
by Assas,			aramon. Frost in Apri	
M. Blouquier	" 16.	12.	-----	
M. Gaston Bazille, of	" 21.	11.5	-----	
Merio,				

Source of Sample	Date of Vintage	Areometric degree of Must	Remarks
M. de Saizieu	Sept 20	11.7	-----
M. Planchon	" 22	12.6	2 yr. old grafts.
Messrs Bazille & Leenhardt,	" 22	11.8	-----
M. Louis Bazille	" 25	11.6	From stock planted in 1872
M. Pomier	" 29	10.5	Vines planted 1872
Messrs Planchon & Durant	Oct. 2	11.1	-----
M. Ernest Leenhardt	" 7	12.5	Vines in their third year.

Some years later M. Bouffard gave these analyses:

Date of Harvest	Density accord- ing to Beaume scale at 15 C.	Glucose sugar in grams	Bi-tartrate of potash in grams	Acidity (tar- taric acid in grams	Remarks
Sept. 13, 1882-	11.	161	"	11.40	Not grafted Fruit pink, pleasant tast- ing.
Sept. 22, 1883-	10.9	183	3.10	10.50	-----

Wines of the Herbemont having been exhibited at the Paris Exposition of 1889 by the National School of Agriculture of Montpellier, M. Bouffard, professor of vineyard culture, made the following analyses:

Must				Wine			
Year-	Density-	Glucose	Sugar	Alcohol	Acidity in Sul- phuric.	Dry Matter.	Ash
1881	----	-----	----	10.2	4.00	24.00.	3.89
1882	11.00	191.00	6.40	10.0	3.50	23.10	3.00
White							
1882	11.40	196.00	7.54	10.8	6.74	"	"
1887	11.76	207.00	"	10.5	4.21	23.20	"
1888	11.57	199.00	3.08	10.4	3.04	23.20	"

Here are some observations which accompany his table. "The Herbemont produces a wine which is quite good both in quality and quantity. At the school, probably on account of the soil in which it is cultivated, it ripens very rapidly. In the neighborhood of Bordeaux it seems to do as well as any place. It should produce from 40 to 50 hek-

liters to the hektar."

The Herbemont brandy is quite good. In 1879 Messrs Gaillard and Pulliat, in their account of their trip in the central grape section, stated that the Herbemont wine as distilled at Jonzac today gives a very fine brandy but with a bouquet quite different from that of the fine champagnes. M. Phellouzet made a study of the distilling of the red wine of Herbemont. He found that three liters of the wine would give $42\frac{1}{2}$ centiliters of brandy of seven degrees Tessa at seventy-one degrees Centigrade, or $1/10$ pure alcohol; it would require, then, seven liters of wine to obtain a liter of brandy of seven degrees. This indicates that it corresponds in productiveness to the average of the liquor of the Folle Blanche. This brandy is fragrant and rather smooth, also we have seen already that in Charente and Lot and Garonne the market which controls the manufacture of cognac and of Armagnac takes very readily Herbemont wine which has not been fermented on the husks to be used for distillation.

DESCRIPTION.- Vine vigorous, of trailing, open appearance; trunk large, bark showing in large, irregular strips rather adherent; root system strong and fleshy, rather spreading.

Buds slender, reddish, covered with a violet-tinted white down turning yellowish green, buds bursting rather early. Young leaves of carmine color at the ends upon both surfaces, pubescent underneath with rather abundant rusty hairs chiefly on the veins. The upper surface soon takes a greenish yellow tint. Complete expansion of the leaves is quite slow. The young clusters of flowers of red brown, with green scales.

Canes long, strong, rather large, branching freely, of a bright green, often showing violet in places, or washed with purple. Glabrous both above and below, the canes of late summer assuming a more or less clear pink color, the color showing on the vine from the ground up. Present year's growth already showing pink mahogany color at the base of the completely matured larger canes. Reddish awl-shaped hairs rather numerous; internodes of medium length, occasionally short, slightly flattened, rather deep grooves; pith when it attains a maximum thickness is about one and one half times as thick as the wood proper. Nodes short, angular, never fusiform, tendrils intermittent, of medium size, bifurcated or trifurcated.

Leaves large, of general orbicular form, with sometimes three and more rarely seven, undulating margin, in this respect resembling the Jacquez, but the color is more clear and less bluish. Principal sinuses deep, lower ones well marked, opening between leaf and petiole almost closed, upper lobe well separated and twisted upon its axis; blade of the leaf generally folded or slightly concave, this condition being produced by the lower lobes turning toward one another underneath the summit of the petiole. Glabrous depressed veins, of almost clear green on the upper surface, the lower surface of a bright

green, slightly glaucous, pubescent, with patches of short down; teeth in two series, slightly pointed, veins prominent and covered with rather abundant hair. Petiole variable in size, usually rather large but sometimes slightly slender, forming a right angle with the plane of the leaf.

Page 267 FRUIT- Bunches medium in size (in comparison with European varieties), or large (in comparison with American varieties), long, conical, cylindrical, shouldered and often slightly doubled, shoulders very prominent and sometimes showing on all sides of the bunch. Peduncle strong and very long, washed in carmine throughout its whole length, enlarged at the point of insertion; stem green in color, much branched; pedicels rather short, medium sized; sprinkling of rather large, wart-like excrescences, inclined to drop from the stem leaving a pinkish pencil on stem which had been formerly inserted in the fruit. Berry spherical, a little under medium size (14 1/2 m/m according to Millardet), compact, uniform in size and shape when they are not deformed by compression, of a reddish black color, covered by an abundant bluish bloom; umbilicus showing in each berry; stigma persistent; skin thin, rather tough, slightly colored, showing considerable trace of the coloring matter on its internal surface; pulp smooth, juicy, juice colorless or very slightly pink, of a somewhat sweet flavor, vinous, slightly acid, and without the least exotic after taste, pleasant to eat when ripe, which is during the last of September or the 1st of October. Downing says that the pulp has so little consistency that it appears to be formed of juice alone and that it should not be given the name of flesh. Seeds from two to four, usually two, free from coloring matter at their surface, long, almost cylindrical, of a reddish-brown color, slightly glossy; chalaza circular, very prominent; rapha shortly inserted on the chalaza.

CUNNINGHAM

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BIBLIOGRAPHY.- See Herbemont.

SYNONYMS. - Long. Long No. 2. (Laliman).

HISTORY & GEOGRAPHICAL AREA. - The Cunningham is a variety of the *aestivalis* which, according to Bush & Meissner, was originated in the garden of Mr Jacob Cunningham in the county of Prince Edward, in the state of Virginia. Dr. Norton, a well known man interested in agronomy and the introducer of Norton Virginia, found the Cunningham in 1855 and sent it to the elder Mr Prince of Flushing, Long Island, from which source it came into cultivation. According to Berckmans its true origin was in Athens, Georgia, but he does not present any proof to substantiate this claim.

The Cunningham has never been cultivated widely in America. A few vineyards of this variety are found in Texas, Virginia and in Arkansas but their importance is notably less than that of certain white fruited hybrids of the *labrusca*, such as the Delaware, which are earlier in maturing and more prolific.

In France it has been for some time rather extensively cultivated in the Midi both as a direct producer and as a stock for other sorts but a lack of success has gradually eliminated its culture, so that today it exists only as a memory or isolated instances in the collections of amateurs and nurserymen. When the first inquiry in regard to hybrid vines was made by the Agricultural Society of France in 1891 with the Vicomte de Saint-Pol as the Secretary, four persons took the trouble to answer upon the subject of Cunningham and declared it a satisfactory variety. Ten years later, when a new inquiry was made by Dr. Landreit of Lacharriere, a single vineyardist remained faithful to the Cunningham. This was M. Azemar of Ganges in Herault, who closes his report as follows: "Its vigorous growth has given it a particular value as a stock." As a direct producer it has slight commendation and it deserves none. It is not rash then to assert that the history of the Cunningham is past and will not be studied from either documentary or prospective point of view.

COMPARATIVE AMPELOGRAPHY. - This natural hybrid belongs to the second group of the *Aestivalis* of the South which is characterized by almost entire leaves, thick, short clusters, according to Millardet. It is a hybrid of the *aestivalis*, *cineria* and *vinifera*. The trace of *cineria* is scarcely visible. The *vinifera* blood shows in any other way than thickness of the pubescence and in the surface of the leaf. The appearance of this variety is that of a pure *aestivalis*; but on closer examination one finds small differences which can only be explained by the hypothesis of Millardet.

The Cunningham has many times been confused with other varieties of the same origin and almost identical appearance. A comparison of the fruit and of the foliage of the two varieties, however, will enable anyone to distinguish them apart. Champin has asked if there were not two distinct varieties of sub-varieties of the Cunningham, one with berries more dark than that of the other. The darker variety was the Louisiana or the Rulander which has a leaf of hardly medium size but having so close a resemblance to the true Cunningham as to induce this error in this distinguished ampelography. It is thus that in the great phylloxera problem in Marsillargues the Cunningham was always recognized by chance visitors as being the common Rulander. This error is easy to understand when one remembers that the two varieties have a quite similar appearing foliage and which appeared all the more similar owing to the fact that the leaves had been deformed by the attacks of the insect. Robeson's Seedling and Caspar Wild are two other vines which offer many points of resemblance to the Cunningham.

The Cunningham had been received from different sources by M. Laliman under the name of "Long." This vineyardist says that the two varieties are quite distinct, the one with dull colored canes, very large leaves, which are cottony on the under side, grayish fruit, compact, ripening late, and giving a wine which tastes like Madeira. This is the Cunningham proper, he says and he gives it the name of Long No. 2. The other which he gives the name of Long No. 1, or Laliman, resembles the first in its general appearance but the canes are red and the canes more lobed, the bunch is less compact, and the black berries ripen earlier. The pulp is colored, while that of the Cunningham is colorless. According to M. Ganzin, the fruit of Long No. 1 is much better tasting than that of No. 2, but the roots are more susceptible to phylloxera. The Long No. 1 resembles in its foliage the Blue Favorite very much, which is recommended very highly by Berokmans for the quality of its wine and known in the United States by the name of Tinta Violet. The abundance of coloring matter in the fruit of the Blue Favorite is sufficient to distinguish it from the Long No. 1 and Long No. 2. The Blue Favorite, which is also known under the name of the d'Innomme-Borty, is an *aestivalis* very closely resembling the Cunningham but not so productive, and consequently without interest. Like all of the Southern *Aestivalis*, the Cunningham is so particular in regard to the climate that this has hindered its culture in all the sections where it has been tried. The fruit ripens very late, more late than that of the Herbemont. It requires land which has been deeply trenched and highly manured and fertilized. It does not take kindly to pruning. It starts late in the Spring; its flowers are without color; it makes a rapid growth; the bunches are small but compact, the berries are also small, compressed, round and reddish, slightly juicy.

Here are the dates of its vegetation at the school of Montpellier:

Buds Burst	Flowering Period	Maturity
30th March-16th April	31st May-9th of June	15th of September

270 In spite of the numerous and serious faults of this variety its great vigor and a certain rustiness which it shows in a poor soil have influenced hybridizers to try its seedlings. In 1884 M. Foex named a seedling of Cunningham hybridized by Herbemont in 1878 after Tochon, the eminent viticulturist. (Tochon described. Description left out.)

CULTURE.- According to Meissner the Cunningham is one of the most valuable of varieties for poor, light, calcareous soils and southern slopes in the vineyards in the southern portion of the United States. In France its adaptability has hardly been established except for our ward deep, red soils which are well drained. M. Breheret states that this variety is very subject to chlorosis in the Drome. Its resistance to alkali is accepted by many writers as about equal to the Jacquez but it has shown itself to be distinctly inferior in this respect to that variety. It is well adapted to the Alpine alluvial soils in which pebbles predominate and it does not do well in cold, wet soils such as our compact white clays.

Its resistance to phylloxera is about 12 and is often found insufficient to protect this variety on soils which lack depth. It is on this account that more vigorous American varieties should be selected for such soils. In good sandy, clay soils with an iron coloring its growth is very rapid and justifies the term "strong grower" which has been applied to it by Bush. Also in the Gard at Campuget, the home of M. Lugol, there is a four year old vine of this variety which one must admire, as it surpasses all of the vines of the same age in that neighborhood.

Champin has always recommended this variety as a stock for grafting because the large size of the vine gave an opportunity to use large vinifera cions. He has been criticised for this, either rightly or wrongly, the critics saying that the cions separate from the stock in many instances and in those which remain attached and grow there is a comparatively unfavorable influence upon the productiveness and the quality of the fruit produced by the vinifera used as a cion. They state that the stock of this variety induces the dropping of the fruit in the cion and also retards the ripening in the fall; in any event it is certain that its pruning is very difficult. Its woos ripens up poorly in the fall and its adaptation to adverse conditions is very poor. These are three qualities which render its use as a stock inadvisable.

At the Montpellier Congress in 1884 the good and bad points of this variety were set out very clearly and impartially by competent and impartial observers. M. Lugol found it unsatisfactory as a stock except for the Clairette, for which variety it seemed to have a particular affinity. Henry Mares asserted that it is very difficult to find a soil which is well adapted to this variety and that it prefers a sandy soil. At Las Sorres, where the soil lacks sand and where the subsoil is cold, it turns yellow and the graft above lacks fruitfulness and vigor. In the neighborhood of Bordeaux, notably at Souys, it has been cultivated for a long time with success. In the lowlands around Bordeaux and in the light, rich soils of Herault and Lattes, the home of Gaston Bazille, it has been raised many years and enjoys a vigor without rival. It is necessary to protect it in the winter in Missouri but in Bordeaux it seems to be able to stand winters even as cold as last winter; however, Millardet notes that in 1875-76 the winter killed some vines which had been grafted for several years on this variety. M. Girerd of the Rhone also states that vines in his section suffered severely in 1879-80.

The Cunningham is capricious. In consulting the public report of the different inquiries that have been made covering this variety one finds qualities credited to it which are of the most opposite character. One man states that it is a very fine grower, another that it is weak and diseased under conditions which are almost identical and where an analysis in the soils does not explain the difference in results. It does not do well on white soils, and in the compact, red, sandy clays its development is well under the normal. Of all the aestivalis which are practically resistant to the phylloxera, this variety is more attacked than the others and it is probable that this susceptibility is the cause of so much difference in the experiences of different cultivators. Even in those soils which are well adapted to this variety, its resistance to the phylloxera is only where it is ungrafted and not where it is used as a stock.

With many certificates of its quality by enthusiastic admirers this variety was imported into this country from America, where its cultivation gave a minimum of 25 and a maximum of 30 hektoliters, sufficient to content the growers of that country, but not sufficient to content our growers who give more intense culture. To obtain the best results it is best to prune long and the better growers make a permanent cordon out of the vine with stakes to support the canes. The fruiting canes are very fragile and easily broken by the wind when growth is commencing in the spring. In summer the leaves at the base of the fruiting canes are liable to drop off exposing the fruit to the hot sun. The fruit ripens late, its odor i

is quite distinctive, neither foxy like the labruscas, nor does it have the fine bouquet of the viniferas; its flavor increases as the fruit ripens.

Its general health in the presence of numerous cryptogamous diseases such as mildew, oidium, black rot, and anthracnose is good, but not sufficient to induce growers to use it as a stock rather than a direct producer, to say nothing of the other faults which have for a long time been known to be attached to this variety when used as a stock.

VINIFICATION.- The Americans have made a pale red wine from this grape which is highly esteemed by the Anglo Saxon palates. When pressed without leaving the juice on the husks the wine of the Cunningham is of the color of Madeira. It resembles very much, up to a certain age, wines of the Pyrenees-Oriental type. If harvested when completely mature it furnishes a must of quite high degree; some as high as 14 are mentioned. In fact the must of the Cunningham was made in 1874 by M. Laliman, who lived in Bordeaux, which gave 13.5 according to the glucometer. Champin says that in deep warm soils with a good exposure wine of this variety is always slightly colored and is a yellow, almost becoming a white wine of the highest quality and attaining 15 degrees. This tendency to yellowness has been against it in the Vaucluse where M. de Camaret lives, who has been induced to cut off his Cunningham vines and graft them with vinifera, which gives a true white wine. The Cunningham wine which was made in 1877 by Gaston Bazille gave 12 on the scale; its color was of *****

an orange red and the flavor pleasant. Among the first of the American wines made in this country, almost all look with favor upon this false Madeira; now and then, however, a discordant note has been heard in the chorus of acclamation. Thus Piola in 1884 refers to this as a wine without color and of detestable flavor. Following is an analysis of the must made in 1866 by M. Camille Saint-Pierre, Director of the Montpellier School of Agriculture:

ANALYSES OF MUSTS OF THE CUNNINGHAM By M.G. Saint-Pierre

Source	Date of Harvest			Areometric Degree	Remarks
M. Bloquier	Sept.	16,	1876	14.3	Vines in their thir year.
M. de Saizieu	"	20	"	14.3	-----
M. Planchon of Montpellier	"	22	"	13.8	2 yr. old grfts
Bazille & Leenhardt	"	22	"	12.5	-----
Louis Bazille	"	22	"	14.8	Stock planted 1873
Planchon & Durand (Gard)	Oct.	2	"	13.6	-----

Gaston Bazille	Oct. 3, 1876	13	-----
M. Pomier	Sept. 29, 1876	12.1	Vines planted 1872
Ernest Leenhardt of Chalet	Oct. 7, 1876	14.3	Vines in 3rd year

Analyses by M. Bouffard.					
Date of Harvest	Density Beaume 15° C.	Sugar in glucose gr.	Bi-tartrate potash in gr.	Acidity tartar. acid gr.	Remarks.
Sep. 10 '82	11.2	191	"	15.20	Not grafted . Pink grape. Sprightly.
Oct. 3, '83	13.2	230	4.00	13.50	-----

Analyses by M. Bouffard						
Year.	Must			Wine		
	Density	Sugar (Glucose)	Acidity (Sulphuric)	Alcohol	Acidity (Sulphuric)	Dry Matter.
1884	10.8	180.00	8.30	12.00	6.10	24.20
1887	12.9	231.00	8.45	11.10	6.02	30.60

M. Bouffard follows up his tables with a few words which are rather favorable to the product of this variety. He says: "Wine alcoholic, of fresh flavor, agreeable bouquet, and of deep yellow color."

DESCRIPTION.-- Vine of great vigor, spreading appearance; trunk thick and large, bark thick, rather coarse and adhering to the vine. Roots of medium thickness and having a tendency to be wiry, straight rough, fleshy, and somewhat spreading.

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Buds red at first, very downy, passing gradually to a pink or green, covered with reddish hairs which persist for a very long time. Young leaves carmine at the points and of a yellowish white elsewhere; upper surface slightly netted and covered with a rather thick cobwebby down, lower surface showing hazel tinted veins. Young clusters of flowers appearing early, reddish in color covered with a light down and numerous chestnut colored scales, slightly flat in shape. Canes very long, attaining sometimes a length of 12 metres, large, slightly sinuous; rough and glabrous except at their base where for a distance of 1 1/2 to 2 centimeters at the maximum they have reddish awl-shaped hairs more or less thick on the upper surface. They are also present, but much less numerous, on the lower

surface of the two or three first leaves of the upper canes; ramifications rather abundant; young shoots showing bloom and streaked with red. Mature canes of late summer of mahogany color. Internodes somewhat long, cylindrical or striated, grooves indistinct and shallow. Pith from two to three and one half times as thick as the wood proper; wood hard; Nodes large and slightly fusiform; tendrils intermittent, long, usually trifurcated, washed in deep purple.

Leaves large, entire, orbicular, indented, rather thick, lobes rather indistinct, lateral sinus rather indistinct; sinus between petiole and blade of leaf often closed; blade of leaf slightly figured between the veins; appearance glabrous and of a bright deep green on the upper surface, more clear than that of the Jacquez, yellowish green on the under surface and lightly pubescent, with hairs more abundant than on the Jacquez and Herbemont. Teeth obtuse or sub acute and in two series; veins rather large; petiole medium length, rather large, cylindrical, forming a somewhat obtuse angle with the plane of the blade of the leaf.

FRUIT.- One or two on a fruiting cane, of medium size 15 to 16 centimeters long including the peduncle, conic, cylindrical or irregularly cylindrical in shape, heavy, often curved at the end, very short, sometimes shouldered or winged, often with a tendril attached, and this often decays early; peduncle large, short, green, enlarged and almost woody at the point of insertion; stem green, pedicels long, slender, enlarged at both extremities; green excrescences prominent, scattering; pencil projecting into the fruit, small and slightly wine colored; berries compressed, large to below medium, of an average diameter of 14 1/2 millimeters, spherical, slightly elongated and often deformed by compression; bloom of a pale grayish pink, assuming a violet color in the center; stigma persistent and quite visible in the umbilicus which is centrally located and rather distinct; fleshy, soft when thoroughly ripe, which occurs about the fourth period; skin thin, tough, slightly coloring the adjacent tissue; pulp melting, juice slightly pink in color; flavor sweet, rather agreeable, slightly acid and a little musky; seeds two to five, usually four, sub-cylindrical, beak short; chalaza prominent and raphe showing as a prominent twisted strand or ridge which extends to the base of the seed.

J. ROY-CHEVRIER.

CYNTHIANA.

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BIBLIOGRAPHY. - See Herbemont.

SYNONYMS. - Red River, Norton, Norton Virginia, Norton's Virginia Seedling, Vitis Nortoni.

HISTORY & GEOGRAPHICAL AREA.- According to most of the writers on grapes who have compared carefully Norton and Cynthiana, they are one and the same variety. It is a native wild vine which was found in 1835 on Cedar Island in the James River, above Richmond, Virginia by Dr. Lemosq. It was propagated for the making of wine by Dr. Norton from whom it gets the name. In 1843 we found it in France under the name of Vitis Nortoni along with Chautauqua and Isabella in the Chateau of Carbonnieu. In its native country this variety was carried to Hermann, (Mo). in 1845 by Messrs Heinrichs and Kehr and it extended over that district very rapidly. Its extension was arrested for a time by a harsh criticism of its wine by Longworth, who was the father of American viticulture. Longworth, prejudiced by the difficulty with which this variety could be propagated, declared it to be worthless, but this check was of short duration and the demand for it was so great that in 1866 it was impossible for the nurserymen to satisfy the demand for this variety.

In the meantime the Cynthiana had made its appearance in the catalogs. William Prince, of Flushing, L.I., secured this variety from Arkansas and in 1858 he sent it to Husmann, who was enthusiastic in the praise of the quality of its wine and propagated it with great zeal. At the World's Exposition in Vienna in 1873 Cynthiana wine from Mr Bush took first prize. This success induced the nurserymen of America, who had increased their stock of this variety since 1866, to call the attention of the French grape growers to the value of this variety for building up their vineyards. At this time, owing to the fungus troubles which had penetrated the French vineyards and to the fact that the methods of re-establishing these vineyards were just beginning to be seen, the moment was particularly auspicious for the introduction of the Cynthiana. Its capacity to resist phylloxera and its beautiful healthy appearance induced considerable demand for this variety but the climate of the Southern District was not adapted to it and its permanent culture has only been successful under a cooler sky, and particularly in the granitic soils of Drome and of the Rhone where it prefers the Alpine diluvium soil which was so well adapted to the Jacquez.

In the Districts of Lyons and Savoy it is still raised in

vineyards of some extent, belonging to proprietors who raise it in spite of the fact that the variety is adapted only to the making of certain kinds of wine. Robin, Champin and Gaillard were strongly in favor of the Cynthiana and it was their influence which produced the excessive enthusiasm of certain grape growers such as M. de Valbreuze, who started plantations of this variety in Beaujeu and in the Department of Ain. Pulliat wisely advised against this venture. At the conference of Belleville of 1882 he criticised the excessive praise which had been given to this variety and said of it: "It does not ripen in our climate and will not strike roots from cuttings." This advice was very valuable in the Beaujeu District. Had it not been for the cry of alarm of Pulliat the most renowned hillsides would have disappeared under the invasion of the Othello and the Cynthiana, a misfortune which was happily averted.

The economic conditions of every country are so different that this which would have apparently been the ruin of Beaujeu was the fortune of Brazil. In the southern portion of America, as also in the north the Cynthiana is very productive. In 1888 Dr. Baretto of San-Paulo stated that great satisfaction was expressed with this variety by the Portuguese and he proposed to propagate it very largely. In the country of its origin, the United States, the Cynthiana is esteemed very highly. It is cultivated in Virginia, North Carolina, Tennessee and Texas. They have tried to introduce it into the northern and eastern states on the Atlantic border but the summers are not sufficiently long in that section to allow it to mature and it has consequently been rejected.

COMPARATIVE AMPELOGRAPHY.-- In America this variety passes for a pure *aestivalis* and is put in the Northern *Aestivalis* class. Millardet in France, however, has recognized this variety as a hybrid of *labrusca*, *aestivalis* and *cineria*. The *labrusca* shows in the sub-continuity of its tendrils and in its showing some permanent stomata. The *cineria* shows but little, while in the general appearance of the plant and in its manner of vegetation it is *aestivalis* more than any other species of grape. Certain writers, and particularly Berckmans and Meissner persisted in designating the Norton and Cynthiana as two different varieties. Pierre Viala tells us that he found it impossible to distinguish in America the Cynthiana and the Norton Virginia and the grape growers of Virginia and the Carolinas often asked him what differences they found in France between these two varieties which they considered identical. The pretended differences are not in the botanical characters, which everyone recognized to be the same, but in the time of ripening and the quality of the wine, lighter in the case of the Norton and very coarse in the Cynthiana. Pulliat has explained this

in his monograph of this variety published in *Le Vignoble*. His opportunity for examining these vines in southern plantations was excellent and he never found any differences between the two fruits either in the time of their maturity, in the quality of their musts or of their wine and he says that both from the botanical and from the cultural point of view they are one and the same variety.

376. One recalls the pleasant adventure at the time of the call of M. Meissner at the Montpellier school. He was taken by M. Foex to the vines of the Norton and the Cynthiana in the school vineyard and it was impossible for him to tell one from the other. Champin has therefore decided that there is no difference between the two varieties.

Many varieties of the same origin as the Cynthiana, that is, of *labrusca aestivalis* blood, are similar to it, but a study of the salient characters allow a ready recognition of the differences; thus the Hermann seedlings of the Cynthiana obtained by Langendoerfer of Hermann, is recognized at first sight by its attractive clear red color or sprightly pink on the young leaves and by some very fine silvery white fibers which are found on the canes. The berry is also more elongated, it ripens later, and its wine takes on a brown green and has a strong bouquet which is much prized in America but which in Europe would hardly please everybody.

It is the same with the hybrids of the Cynthiana produced by T.V. Munson. His Concord x Cynthiana hybrids the Balsigers and the Gold Coin, and the Cynthiana x Martha hybrids the Hopkins and Linsecumeii x Norton, and still others show readily by the white color of the seed and the oval form of the same and also by a *labrusca*-like foliage, as in the Gold Coin, or the *rupestris*-like foliage as in the Hopkins. Of all things it will not do to have confusion between these two varieties. This is the reason we have names such of the seedlings of this variety as came to our mind and which we have studied.

There is a white Cynthiana. This form was seen by M. Viala at the time of his trip to America. Meissner mentions two white Nortons obtained as seedlings, one by the elder Langendoerfer and the other by Balsiger of Highland, proving at least in the case of the last the presence of *labrusca* blood. Both are very late in ripening, more late than the black form, and in spite of the recommendation of Professor Hussman, who mentions the sweetness and the fine flavor of these varieties, they have been raised only to a very limited extent.

The Cynthiana like most of the *aestivalis*, is very particular in regard to location. In America, and particularly in Virginia, it succeeds in the sandy, gravelly soils and is disappoint-

ing in the clay marl soils and particularly in the limestone soils. In France it seems to be adapted to the granitic sections in the iron soils, even where they are dry and poor in the temperate regions where the climate is somewhat cool. Its foliage is affected by the hot, dry atmosphere of the Midi; but if it is grafted on the vinifera, the Aramon for example, it is not so particular in regard to climate, and one may see at the home of M. Gustave Giret in Amilhac near Servian, alternately stunted or vigorous rows of the Cynthiana, depending upon whether they are growing on their own roots or on the Aramon.

As a stock the Cynthiana is not to be recommended. In 1877 Aime Champin made 1500 grafts upon roots of this variety; the last ~~of~~ which were not made until after the sap had gone down, succeeded very well but the first were almost a total loss. Bench grafts of the cuttings give the poorest success of any other method on account of the great difficulty which the cuttings show in striking root. In spite of its rather great resistance to phylloxera (14) which is greater than that of the Jacquez, the question of adaptibility overcomes whatever of advantage may be there gained and its advantage as a stock is exceeded by the rupestris in all places, even in those geological formations which are best adapted to the Cynthiana.

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The general health of the Cynthiana is very good. M. Viala states that this is the case in America. It was one of the most resistant varieties to the mildew and above all to the black rot which has contributed to its success in the southern states. It mildews in France, particularly in the valley of the Saone where it suffers from the first attack of the season and very peculiarly resists the attacks which come in the autumn. M. Robin in Drome states that it frequently happens that this is the only one of his varieties which escapes the anthracnose. It is not affected by the oidium, but the sulphur treatment defoliates it and it is considered to be resistant to the gray rot. Its abundant foliage protects its clusters in a large measure from the hail, at least so says Dr. Grandclement, who is a warm champion of this variety. Its detractors respond that this is true in the sense only that the berries are so scattering and so small that the hail does not happen to hit them. Berckmans says that this variety is sterile which he gives as a new method of distinguishing it from Norton, which he states is very fertile.

The truth is that it is a very late bearer with us. In America they state that it will bear the third year. It is not very productive and its productiveness depends very largely on the method of pruning adopted.. Its botanical fertility cannot be denied. It has three clusters of flowers one to the first bud and two to the second but its productiveness is always low. According to the advocates of Cynthiana - that is to say M. Girerd of Brignais, who has continued to cultivate his hectare of Cynthiana

for twenty-six years with satisfaction - it is necessary to plant this variety alternating in the rows so as to give the foliage at least two meters of air on every side. When planted in this manner in a favorable soil the vine grows very rapidly, forming long canes which make the trellis into a living wall of verdure. Under these conditions it will produce thirty to forty hectoliters to the hectare, a quantity that may be maintained and perhaps increased by disbudding part of the vine and renewing other portions, to be conducted with judgment and skill. Besides this it is desirable to hasten maturity by thinning out foliage to a slight degree a fortnight before the normal harvesting period and particularly to remove the foliage in the interior of the vine so as to allow the sun to enter.

The wood of this variety does not always ripen satisfactorily in the fall; nevertheless it shows itself to be with us very hardy of vine and of root against the cold of winter. Cynthiana vines which are making a very vigorous growth burst their buds early in the spring and ripen their fruit very late.

Here are the periods of vegetation at Montpellier where it ripens more naturally in the Centre:

Buds Burst	Flowering Period	Harvest
Mar. 17 - Apr. 9	May 31 - June 10	August 22

This variety requires a great deal of potash and phosphoric acid and while it stands a good chance of securing the first of these elements in the granitic soils to which it is so well adapted, it is necessary to apply the second artificially as it is quite generally lacking.

Hussman gives the following itemized account of the cost of establishing an acre of Cynthiana in America:-

850 plants, 1st grade, 6x8, at \$25. hund.	\$212.50
General Expenses	254.50
Care during two years	125.00
Two Years Interest at 6%	70.00
Total	\$662.00

This would be 8.687 francs per hectare.

287 WINE MAKING.-- We know that it is the quality of the wine which has made the reputation of this variety in America. According to Bush & Meissner this is the best red wine of the United States.

"It has an exquisite perfume," they say, and they further state, perhaps in all sincerity, that it will stand comparison with the most choice wines of Bourgogne. At the World's Exposition in Vienna in 1873 this wine carried off the first medal for merit and found itself classed with the best products of the Old World. At the Congress of Montpellier it was appreciated as a red wine of beautiful color, of good body, and with a good amount of alcohol, which recalled the old Rousillon.

M. Viala, on his return from America, said that the wine of the Cynthiana was the best of all the red wines produced by American vines. "Its color is also very dark like that of the Jacquez but it is a live red and never bluish like the sky. It has a high degree of alcohol.". He further adds: "Wine of the Cynthiana is the best I have tasted in America particularly when it is made from Cynthiana grapes exclusively. The Americans have the faults of youth and rapid development, and these faults show in wine making which are very common in the American cellars." The abundance of its tannin makes a wine that is so astringent that it is used with success as a remedy for dysentery. These same qualities make it also a tonic and a febrifuge.

Nevertheless, depending on the soil and perhaps also to a degree on the maturity of the grapes, the wine from this variety varies so much that the different sorts will please the tastes of different amateurs. M. Ganzin has detected in it the flavor of the strawberry, Husmann the taste of coffee, which they credit to the Norton. When the berries are washed before pressing these flavors are largely removed. The possibility of making two varieties from the Cynthiana and the Norton, according to the bouquet of their wine, was suggested to the Congress of Montpellier by M. Sabatier. The suggestion was not well taken by the members present and it was generally agreed that the conditions found in the wine depended upon the neighborhood, the culture given, and the method of making the wine. Pulliat, who has tasted numerous samples from Midi and from Santre and who has never been accustomed to this wine says that it is flat and worthy only of use for commercial mixtures as one of the elements in a blend, and he further says that even for this purpose it is not as good as the wines of Midi. Everyone in Beaujeu, however, has not as delicate a taste as he and his friend Bender, who loved to make fun of this variety by referring to it as the "medicine wine." Without counting M. de Valbreuze, whose exaggerated appreciation of this wine looks suspicious to us, there was at the meeting of Lyons Viticultural Society in that town on the 12th of December, 1885, many vineyardists who tasted the Cynthiana wine. Of these men many of them did not hesitate to estimate its value as high as fifty francs per hectoliter. Two years later Dr. Grandclement protested against the decision of the congress at Macon where they had recommended dropping the Cynthiana

for vineyard culture, and he supported his argument by samples of the wine when it was properly made and also tables of their analyses.

The debate soon lost most of its interest for the admirers of the Cynthiana were not planting any more of this variety, surpassed as it is in color by the last creations of Siebel and Couderc and it is fortunate for those grape growers who did not pull out these varieties which they already possessed to replace them with such varieties as the Cynthiana. I append a technical description of M. Girerd of Brignais of this variety from the wine making standpoint. M. Girerd is one of the last of the enthusiasts on the Cynthiana subject.

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Pure wine of the Cynthiana is a pure liquid syrup, a sort of an extract of wine which contains an excess of all the elements which constitute the best ordinary wines, color, tannin, acidity, and bouquet. Thus, before the Griffe law was passed the large growers of Cynthiana, such as Robin, who had twenty hectares, ameliorated their wine of this variety very readily by the copious use of water. They added to the must a quantity of water constituting about 80% of the weight of the must and about 15% to 20% kilograms of sugar per hectoliter of water.. By the time this first pressing had fermented and as it raked off, they made a second putting in half as much water as in the first to the same quantity of sugar. The blending of these two wines in the vats makes what is known as the Cynthiana wine proper. This is in good demand at Bercy and even in Paris, an excellent ordinary wine which keeps well.

Since the diluting of wine, either with or without water is forbidden for those wines which are going on the market, Cynthiana wine must now be made otherwise. This has confined its use chiefly to the mixing of one half or one third of this variety with the juice of the Othello, Senasqua, or other varieties which are very productive and late in ripening and the juice of which lacks color. The blending of these varieties gives a color which is very remarkable in its general appearance and the bad years when the vintage generally is too abundant and inclined to take a mixture of a small quantity of the must of the Cynthiana in the fermenting tanks of the Gamay which is rather a thin juice and without color, renders the ultimate product a good tonic and stomachic, and indeed sometimes a good heart stimulant.

It is very difficult in practice to find Cynthiana wine which is made naturally with us without blending so that one may judge of its true value. We have chosen some analyses which seemed to us to be above suspicion.

MUSTS OF THE CYNTHIANA

(Analysis of M. Camille Saint-Pierre)

Source	Date of Harvest	Areometric Degree	Remarks
M. Boileau of Castelnau	Sept. 11, 1876	11.6	Vines in 3rd year.
M. Planchon of Montpellier	" 22, 1876	12.5	From 2 yr old grafts.
Messrs Castelnau & Reich	" 11, 1876	12.5	" " " " "

In 1887 Dr. Grandclement gave an analysis of Cynthiana wine in connection with an analysis of vinifera wine for comparison.

ANALYSES OF M. GRANDCLEMENT.

Variety	Alcohol	Total Acids	Dry Matter	Cream Tartar
Cynthiana French wine	10.8	5.35	22.	2.25
2/5 Gamay & 3/5 Persagne	8.1	5.	18.5	2.30

In 1890 Professor Paraud found wine of the Cynthiana made from old vines at the viticultural station at Villefranche, upon the Saone, to have the following composition:

CYNTHIANA WINE

(Analysis by M. J. Perraud).

Source	Alcohol	Acidity (as Sulphuric Acid)	Dry Matter
Villefranche(Rhone)	5.15	11.1	25.

The observations which accompany these analyses are interesting and we summarize them briefly. The Cynthiana wine, as made here, is weak in alcohol but undoubtedly the most beautiful in color of any we have obtained. It is of flat taste but of rather agreeable fragrance. It does well in Centre but is so particular in regard to soils and climate and so difficult to propagate, that it does not seem probable that it will have any extensive culture. Its wine is very coarse and highly colored and seems to be of some use for mixing with weak wines, but there is not sufficient of it to be generally used for that purpose.

DESCRIPTION.- Vine vigorous, rather erect; trunk large to medium, bark adhering.

Buds starting early in the spring, downy, deep red, covered with small rusty patches which are grouped in twos or threes, changing from red to carmine as the season advances. Young leaves of a purple color on both sides, veins with scattering patches of fawn-colored hairs. Bud scales large and translucent; the purple color which shows first on the upper surface gradually covers the under surface as well. Leaves thick, superior lobe acute; teeth few, distinct, very prominent with green glands upon the outer edge of the leaf. Young clusters of flowers of a reddish brown showing in the axils of the late appearing leaves, folded in the elongated bracts.

Canes long, rather thick, slightly erect and somewhat abundant almost stright, dull and rough in appearance owing to the presence of numerous red hairs; thick bloom in the vicinity of the nodes; growing with united veins of reddish green color washed with purple; canes of late summer of a clear violet pink, very dark on the sunny side; internodes cylindrical with shallow groove-like striations. Wood hard, nodes conic, rather prominent, tendrils sub-continuous and often discontinuous, large, wine colored at their base; leaves large strong, sometimes more than twenty-five centimeters long, much longer than broad, slightly concave, thick, three to five lobed, sometimes almost entire; superior sinuses rather shallow, inferior sinuses almost lacking. Sinus with petiole and blade of leaf moderately, leaf blade of a clear yellowish green changing to a deep, bright green slightly crimped, glabrous on the upper side, of a very pale green on the under side which is covered with a light reddish down which is of rusty color on the veins; these hairs are quite long and stiff. Teeth shallow, unequal, obtuse, and shortly mucronate. Petiole strong, cylindrical, covered with hairs and cobwebby tomentum, offering almost a right angle with the plane of the blade of the leaf.

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FRUIT.- Clusters averaging three on the larger canes and two on those of lesser length. Berry medium or small, conical, cylindrical, elongated, winged, loose. Peduncle long, rather slender, of rusty appearance; petioles short, enlarged at the two extremities, slender in the middle; pencil which extends into the fruit is purple and wine colored slightly adhering to the berry. Berry small, almost globular, slightly quoit shaped, depressed at the umbilicus. Bloom of a violet black. Point of stigma adhesion slightly apparent, skin thin, elastic, and rather tough, of a deep black color and of a bluish bloom when ripe, which occurs at the end of the second period. Pulp slightly juicy, sometimes rather solid, of a shade of red; juice very highly colored and of a peculiar, rather agreeable, not very sweet flavor; seeds two or three.

J. ROY CHEVRIER.

CATAWBA

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SYNONYMS.- Catawba Grape, Tokay, Catawba-Tokay, Red Muncy, Singleton(?), Michigan, Fancher, Saratoga, Keller's White, Mead's Seedling, Merceron, Mammoth Catawba, Omega, Saratoga, Tekomah, Withe Catawba.

HISTORY.- The Catawba is an American variety which was found in 1801 by Mr Murray at the top of the Black Ridge in the western portion of North Carolina, Buncombe County, in the foot-hills of the Appalachian Mountains. In 1807 General Davy, who lived on the Catawba River where this variety had been found, cultivated some vines of it on his place at Rocky Mount and somewhat later but before 1816 sent some young plants to friends in Maryland under the name of the Catawba grape. Mr Scholl of Clarksburg, Maryland, bought one of these plants and propagated from it. A German clergyman who saw this vine in fruiting, stated that this was the Tokay which he had seen in Hungary. Mr John Adlum in the District of Columbia in 1818 secured and propagated this variety under the name of Tokay, he having believed the statement of the German clergyman and the description given in the first edition of his book, which was printed in 1823, is under the name of Tokay, but in the second edition the name is changed back to that given by General Davy, Catawba. Adlum stated that the service he had rendered the United States in disseminating Catawba was very great.

The Catawba has, indeed, taken a very prominent place among the cultivated grapes of the United States; it is propagated extensively and constitutes the chief variety in certain sections particularly in the lake districts along the edge of Lake Erie and in the northern part of the state of New York upon Lake Keuka where hundreds of hectares of grapes are worked up into champagne having the must of this variety as a base.

But the culture of the Catawba has declined little by little on account of (Page 283) many serious failings in this variety.

this variety ripens very late, in which respect it is different to other sorts of the *vitis labrusca*, the species to which it is usually credited. It is also quite susceptible to mildew, particularly when the effect of winter has lessened its capacity for resistance. The Catawba is less hardy than most native American varieties; it also is very slightly resistant to the phylloxera, hardly equal in this respect to most of the *vitis labrusca* (4) in the scale of resistance 0 to 20. The black rot and the anthracnose also attack the fruit.

It is raised successfully only in rich soils where modern alluvial deposits have formed on the older formations. It has resistance to calcareous chlorosis. This variety has never been known in France except in collections. In the United States the fruit of the Catawba is amongst the best known on the market but its late ripening period is a hindrance to its use for this purpose.

The late ripening period, which does not come until fifteen days to three weeks after the *vitis labrusca* varieties, indicates that the Catawba is not a pure *labrusca* but a hybrid; however, the tendrils are continuous, and the leaves have tomentum as in the other *labruscas* but it has the raphe and particularly the chalaza very prominent, which is quite different from the *labrusca*, where in place of these two excrescences is a characteristic depression. M. A. Millardet states that the Catawba is a hybrid between *labrusca* and *Linsecumeii* and perhaps of another species also. Some others credit this variety with a cross *riparia* origin. Contrary to the opinion of L. H. Bailey, we believe that the Catawba is a *labrusca* x *vinifera*. It has many characteristics which conform, in our opinion, and the numerous seedlings of Catawba, such as Diana, Aletha, Anna, Heine, Mottled, Etc., have characters which are distinctly intermediate between *labrusca* and *vinifera*.

The *vinifera* parentage of Catawba is easily explained. A hundred years before the discovery of the Catawba numerous attempts had been made by European emigrants to the Carolinas and other parts of the United States to raise European grapes. These vineyards would be maintained for sometime and would invariably disappear, owing to the attacks of phylloxera. These efforts were frequently made where the surrounding woods were full of *vitis labrusca*. There nothing astonishing that these native vines should cross one with the other and produce numerous hybrids. I have seen many of these in my investigations. There is also nothing surprising in birds carrying seeds of these hybrids for long distances. The Isabella, which is certainly a hybrid of the *vinifera* and *labrusca*, is a case in point. This variety was found in 1818 by Mrs Isabella Gibbs growing wild in South Carolina, and was propagated by her.

DESCRIPTION.- Vine vigorous, of open appearance; trunk strong, stocky; bark thick and showing in broad irregular strips.

Buds single, with rather numerous hairs of a golden red. Young leaves carmine on the under side, where this color persists for a long time; veins green, parenchyma covered with a thick down, thick in their upper surface, of a golden yellow; young leaves oblate, flower clusters covered with thick white hairs of a dirty yellow tinge, (Page 284) canes long, strong, straight, cylindrical, slightly glossy, somewhat rough on account of the persistence at the base of patches of stiff hairs, very light greenish yellow bloom at the nodes and glabrous in the herbaceous state of a rather deep mahogany brown in late summer; internodes of medium length; wood tender; diaphragms thick; nodes flattened, with distinct striations; tendrils continuous, strong, bifurcated; some canes with discontinuous tendrils; leaves large, slightly thick and not rough, slightly blistered, sub-orbicular, indistinctly tri-lobed, petiole sinus deep, closed at the extremity where the lobes overlap, veins rather acute, upper surface glabrous and of a rather deep green, lower surface of a clear green with patches of tomentum and scattering hairs on the under veins and the parenchyma two series of very distinct patches; shallow teeth - petiole long rather strong, greenish, forming an obtuse angle with the blade of the leaf.

FRUIT.- Bunch large to medium, shouldered, conic, irregular; peduncle long - different from the *vitis labrusca* - large, ligneous at the point of insertion, green and herbaceous on the stem proper; pedicel rather long, swelling at the point of insertion quite distinctly and with occasional excrescences. Berries separate very readily from the stem leaving a colorless pencil (as in the *vitis vinifera*). Berries large to medium, spherical, bloom of a violet red, colorless on the inside; central stigma persistent, plump; skin rather thick, slightly elastic, pulp rather fleshy, juice colorless or slightly pink, flavor slightly foxy or at its best with a characteristic after taste. Seeds one or two, chalaza and the beginning of the rapha distinct.

T. V. MUNSON.

JACQUEZ

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SYNONYMS. - Lenoir, The Black(A.S. Fuller), Jac, Jack, Jack Grape Jacques, Jacquez, Jacquet, Cigar Box Grape, Segar Box & Segar Box Grape, Longworth's Ohio, Ohio, Black Spanish, Mac Candless, El Paso, Burgundy, Black Spanish Alabama, Alabama, Devereaux(G. Husmann), Blue French Grape(Munson).

HISTORY & ORIGIN.- Like many of the other aestivalis varie- ties, the origin of the Jacquez is a mystery which the laudable efforts of many American pomologists have not entirely cleared up. No variety has aroused so much controversy, speculation, investiga- tion, and different claims as to its origin. A piece of a cut-

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ting left by some individual in a cigar box at the home of Mr Longworth, the great grape grower of Cincinnati, Ohio, was, says Champin, the Adam of this family whose history is a legend. This cane and sprout from it fell into the hands of Berckmans, a nurseryman of Georgia and it was from him and under the name of Jacques and Lenoir that it was received in France in shipments sent in 1859 and 1865 mixed with other American varieties. This was the first shipment of American cuttings to France. Of those who received cuttings from this shipment there were particularly Messrs Laliman of Bordeaux and Borty of Roquemaire (Gard). Somewhat later Laliman wrote Pulliat that he alone had received the true Jacques, and that the vines of Roquemaire had been secured from him. Madame la Desse de Fitz James showed that this was a mistake and that Roquemaire had received his vines directly from America. This apparently unimportant detail was the source of a long controversy. We shall guard ourselves against participating in same.

With the coming of the phylloxera in France the Jacques, which when first imported was, perhaps, the means of introduction of this pestiferous louse, showed itself to be a valuable variety. Its great resistance to the phylloxera and its prolificness made a favorable impression on the few individuals who were raising plants of this variety at that time. Laliman showed with pride his famous Tourate vine with 400 bunches of grapes thereon at Bordeaux. This phenomenal vine ~~became the favorite of many~~ ~~grims who drank to the health of American wine~~ was the object of much attention on the part of those interested in American vines. Planchon asked for a cutting of this vine in order that he might be able to make a study of it and similar varieties mentioned by Roquemaire. On the 16th of September, 1870, he received a cutting of the Jacques from M. Laliman and he later stated that the Innomme-Borty was the same as this variety. He himself enthusiastically planted it at Montpellier in 1871, as did M. de Vevie at Lot-et-Garonne, and M. Aguillon at Var.

The French viticulturists who proclaimed the merit of this variety as a direct producer, went to market after more wood of the variety. But strange to say, the Jacques had there become unknown; even in Georgia from whence it had been received they could not find it. It existed neither in the vineyards of Longworth nor of his son, nor that of Berckmans. Its susceptibility to mildew and black rot was so great that it had been discarded for some years.

Nevertheless, in the warm and dry portions of Texas it was still cultivated in vineyards some of which were of considerable extent. It was there known under the different names Black Spanish, El Paso and Burgundy. The American nurserymen, who were ignorant of the fact that these varieties were the same as the

376 Jacquez, were very sorry not to fill the orders of their European customers. Berckmans stated in 1871 that this variety was lost and that its culture had been abandoned; no one then doubted that the Black Spanish and the Jacquez were two separate varieties. Onderdonk was the first to entertain suspicion of this interesting synonymy. He had some vines which he had secured a long time previously of Berckmans under the name of Lenoir. In his catalog he gives a detailed description of Lenoir accompanied by this remark:- "Its foliage and general appearance are exactly the same as the Black Spanish." From this statement to the statement that the Lenoir and Jacquez were identical was only a step and this step was made shortly afterward by Downing. In his pomological studies he gives the Black Spanish, Lenoir, Ohio and Jacquez as identical. Berckmans, however, did not agree with this. In reply to Onderdonk he said on the 17th of April, 1875: "The Lenoir and Black Spanish are both seedlings of our native aestivalis type; they both have the same juice. The Lenoir has a compact and winged bunch; the Black Spanish, on the other hand, has a very loose cylindrical bunch which sometimes attains a length of eighteen inches. The latter makes a darker colored wine. These two are perhaps the best wine grapes we have. The Lenoir originated in South Carolina, the Black Spanish in Natchez, Mississippi." Onderdonk did not accept such arguments. The characters on which Berckmans had based the difference between the two varieties did not appear to him to be sufficiently fixed. He had noticed that both so-called varieties were very variable in different seasons and under different modes of culture, and that certain vines of the Lenoir would change to Black Spanish and Black Spanish to Lenoir. He expressed himself on this subject to Bush & Meissner, who in their catalogue of 1874-75 stated that the Black Spanish was supposed to be the same variety as the Lenoir and the Jacquez.

This was good news for our southern nurserymen who, not able to find the Jacquez, accepted the Black Spanish. Rashly, but, as it turned out, fortunately, M. Paul Douisset made an importation of Black Spanish from Texas. He shipped from Dallas, from New Braunfels, and particularly from the establishment of M. Andran Eichel thousands of cuttings which were used to plant large Jacquez vineyards in 1876 in Languedoc and Provence. His risky enterprise was wholly successful, for Professor Planchon announced after a comparative study of the Laliman-Jacquez, the Lenoir-Borty, and the Black Spanish of Douisset, that these three varieties were a sort of Trinity of the viticultural Messiah, and ~~that~~ the Jacquez, the true and only Jacquez, so much desired and so vainly sought.

Briefly related such is the history of the Jacquez into France, but the first origin of this variety will always remain a deep mystery.

"Native seedling of the *aestivalis* type," says Berckmans. This is probable. "Accidental hybrid of *aestivalis* by *vinifera* and *cineria*," affirmed Munson and Millardet. This is rather certain. "An American vine of European importation," adds Bourquin, who admits the mixed blood of the Jacquez but attributes the place of hybridization to the Madeira Islands. This last hypothesis we have examined closely, not without distrust, in regard to the Herbemont. Since the broad documents on which this claim is based are not available to the public we seem today to be compelled to accept the results of local research upon this interesting subject and particularly that of our colleague Don Luis de Castro, who first published in the *Revue de Viticulture* the results of his labors.

The Jacquez, even under the name of the Blue French grape, could not possibly have originated in Madeira Islands for the *aestivalis* which was its parent does not grow there and never has grown there. According to the records of the islands the oidium was not known in Madeira until 1851, as the result of an importation of grapes made at Funchal by Jean Martin, a French gardener. This disease was evidently unknown and undesired. The American varieties were not then cultivated. The Isabella alone had then appeared, brought in from Africa. The Catawba did not come until very much later and this is the whole case. The transactions of the agricultural societies and the testimony of the oldest grape growers do not mention any other American importations. Not a trace exists actually of the famous *aestivalis* which served to produce by the crossing of the local *vinifera* the foregoing American hybrids such as the Jacquez and Herbemont. The reputed crossing is evidently a viticultural legend, historical, ingenious and poetical, too poetical to be historically correct. To sum it all up, one must consider the Jacquez as an accidental hybrid American seedling of the *aestivalis* which attracted the attention of an old Spaniard by the name of Jacquez and which was propagated by him at Natchez on the banks of the Mississippi, and which was then carried by some person unknown to Longworth in Ohio in a cigar box. The forgetfulness on the part of the unknown person who carried this variety from Mississippi to Mr Longworth undoubtedly added a great deal to the confusion which has surrounded this variety.

GEOGRAPHICAL AREA.—The Jacquez has never been cultivated extensively in the United States. Under its different names it has been tried but it is extremely susceptible to rust and rot; mildew and Yankee anthracnose made its culture decline and then disappear in the greater number of sections where tried. Thus Longworth and Berckmans, who had large collections of the varieties which were watched closely by all the grape growers in their neighborhoods, raised this variety for a time and finally abandoned it. Even in the central and east central states Missouri, Tennessee, and Virginia, where it ripened its fruit perfectly, its culture declined little by little and it was finally replaced

by the more healthful Cynthiana. Today one finds this variety scarcely raised at all except in Texas and even there in only a very limited area. At New Braunfels, Dallas, Austin, San Antonio, and Houston it is still raised to a limited extent but the growers each year are giving greater preference to the Herbemont and Cynthiana. According to Meissner, there have recently several attempts been made to grow this grape in California, with what success we do not know.

M. Pierre Viala in the history tells us how astonished he was to find so few vineyards in Texas and of the vines in that section how few of them were Jacquez. Of the 150 hectars which constitutes the acreage of vineyards for this large state he found no more than four or five hectars to be of this variety. At San Antonio and Austin he says he found the Jacquez cultivated only in gardens. We saw nothing of the large vineyards of the Jacquez which they told us had once existed in this section. The abandonment of the culture of this variety in Texas is due to the black rot and mildew. One would expect to have found it in cultivation in this western country where the climate is very dry, but they have renounced it utterly.

This variety makes up, in Europe for its lack of importance in the New World. There is not a viticultural section on the continent where it is not known either as a direct producer or particularly as a stock. From the time of its introduction into France the extent of its culture has been very rapid and constantly increasing. Its vigor, its adaptability, which is much greater than that of the riparia and the rupestris, its productiveness, its high color of its wine, which renders it valuable to blend with the Aramon, have made this variety very successful in all sections from the Alps to the ocean, in the southeast to the southwest, wherever the soil is sufficiently rich and the air sufficiently dry so that the variety does not suffer too much from the attacks of the phylloxera and the anthracnose. One finds vineyards even in the department of Herault, of the Bouches-du-Rhone, of Var, at the foot of the Alps, and in Drome, also in Ardeche, in Gard and Aude. It may be found then disseminated in all of the grafted vineyards, where it is easily distinguished by its abundant foliage and in the borders along the fields where it forms a sort of hedge. They are still planting it at Herault and Var at the base of the Alps; these are the departments in which this variety is most profitably cultivated on account of the French varieties cultivated with it. A quarter of the wine cultivated at the base of the Alps may perhaps be attributed to the Jacquez. The grape growers of this section plant it in their most fertile fields, reserving for the grafted sorts the drier and more arid hillsides

When this variety was just being introduced into France, Meissner, who was well informed in regard to grape growing, and who made a trip through France, noticed the vine's healthy and prosperous appearance which the Jacquez had in our country, an appearance quite unknown to this variety in its native section and he predicted then its triumphal course. Pulliat in our country had stated that this variety would succeed wherever the olive was grown. He says "Its time of ripening, which comes at the second epoch, will allow its cultivation in all those sections where the Siriah, the Mondouse, the Cabernet, and other varieties which ripen at the same period, succeed." And, indeed, the Jacquez has even done better than that, for it has extended into parts of Gironde and Charente, and other sections along the valley of the Rhone, covering the Drome, the Isre, and succeeding even in portions of Savoy. But this hasty generalization should not be accepted too sweepingly by amateurs in the north for this is essentially a southern variety. From the time of its introduction into France it has been attacked by mildew and other fungous diseases. Robin, who lived in Isre, which has a cold and humid climate, says in Vigne americaine of which he was one of the three founders, that his Jacquez were ravaged by the anthracnose and defoliated by mildew and charges the variety with being unhealthy. Planchon, however, in reply stated that this accident was due to the climate and not to the variety, and that it did very well in sections not very far removed, and was extremely healthy. Now, bad places for the Jacquez were extremely numerous. This was the case at M. Buisson's in the cold of Nauroze and also at M. Garonne at Vienne, and a thousand other places. It is necessary, then, to select places for raising the Jacques, since it refuses to play the part of a universal variety, which many of its early admirers had forced upon it. Champin expresses this admirably as follows: "The Jacquez," he says, "has ^{the} Mediterranean sickness. In order to smile it must see the blue sky."

(The remainder of this section is not translated as it does not seem to be of importance).

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COMPARATIVE AMPELOGRAPHY.- The Jacquez is a hybrid of the *aestivalis*, the *vinifera*, and the *cineria*, with the characters of the *vinifera* and the *aestivalis* very marked, and that of the *cineria* very slightly apparent. The Jacquez has been classed in the southern *aestivalis* group, a group which is characterized by lobed leaves and shouldered, elongated bunches. It is a vigorous variety, of a semi-erect appearance, with a strong, fleshy root system, somewhat tap-rooted with numerous, emarginate leaves slightly resembling the foliage of a fig, and of a characteristic bluish green color. The buds burst early in the spring, which renders the variety liable to spring frosts; it matures rather late in the season, certainly later than the second period in which it is generally classed, even though it be eatable and agreeable, being made into wine in the second period it has not acquired all its wine making value, that is, its sugar and color, until the third and even the fourth period. The grape growers of Herault gather

the best fruit of this variety in the month of October and never before the middle of September. The average dates of the vegetation of this variety at Montpellier are as follows:-

EPOCHS OF VEGETATION OF THE JACQUEZ.

<u>Buds Burst</u>	<u>Flowering Period</u>	<u>Ripening Period</u>
Mar. 27th-April 9th	May 30-June 10	September 8-September 21

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The greater part of the synonyms have come from the various hypotheses connected with its origin. Lenoir, Ohio, Alabama, Devaux, are the names of counties or provinces; Black Spanish means a Spanish Grape and Burgundy a plant from Burgundy; Cigar-box grape and Longworth's Ohio are allusions to the cuttings of this variety which were left by some unknown person in a cigar-box at the home of Mr Longworth, the distinguished Ohio pomologist. These cuttings were carried by an old Spaniard named Jacquez, which in the American parlance was rendered Jack and in middle France Jacquet. Of all these terms which have been consecrated by usage, Jacquez alone has survived and this in spite of the protestations of such authorities as Pulliat and Champin. This is a strange barbarism. "We adopt," says Pulliat in Le Vignoble "the name of Jacquez Lenoir as the best name for this variety, a name which is rather definite and today is not known to be attached to any other variety. The first indicates the name by which it is known in France and by which it is known by its first propagators in America; the second is an American synonym which is still widely used in the home of its origin." This suggestion was the more important because of the fact that for a long time, in spite of the authority of Planchon, the name of Jacquez had passed for two distinct varieties and even today all Americans state that the Jacques is of uncertain fruitfulness, in which respect it is different from the Lenoir.

This variety shows two forms, the one has a uniformly clear red wood, rather numerous canes semi-erect, sometimes branching; the leaves are smaller, orbicular, pentagonal, rather rarely lobed, sometimes five to seven lobed; the bunches are numerous, medium-sized, cylindrical, shouldered; the juice colors rather late in the maturing of the grape. The other has a wood more drooping or pendant, of dull carmine red, with violet gray showing on part of the cane, longitudinal striations which are rather deep on the four basal internodes; the canes are less numerous, larger, and generally have

lateral branches; the leaves are large and show rounded three lobes which give it a certain resemblance to the fig; the bunches are less numerous, long, often shouldered, cylindro-conical, slightly compressed or loose; the juice is of red color when the grape is ripe. The first of these forms is the Lenoir; the second the Jacquez. They have been confused in both France and America. Buchanan distinguishes them thus; "The Ohio, or Cigar-box Grape: a beautiful grape, black, tender, melting, with small berries. It does better when pruned long and is hardly adapted to the commercial vineyard. Its deep red wine has a very slight perfume when it is new but it improves as it gets older. Lenoir: a juicy grape with small black berries, tender, with pleasant taste, but subject to rot and other fungous disorders when planted in clayey soils."

Berckmans lists the good and bad points of these varieties, which he says are very distinct and which have only the two points in common, that of high quality and the fact that their culture has been abandoned. But in 1878 Meissner, who had been converted by Planchon to the idea that the two varieties were identical, designated them as such. Onderdonk stated that the variety is a hybrid and is consequently very variable, showing under the form known as Lenoir, under that known as Jacquez, and also under many intermediate forms.

(Page 381 and half of Page 382 not translated as they do not seem important.)

CULTURE.- At the time when the Jacquez was imported from America it was used as a stock and also as a direct producer for the growers had a hope of making wine from this *aestivalis* hybrid. They quickly changed their minds, however, on account of its susceptibility to various fungi. Its roots being strong, it found favor as a stock and it is as a stock that it has become popular in France. It was the first Bayard of Franco-American viticulture and not the worst.

Its resistance to the phylloxera is only moderate and Viala has given it 13 in the scale. This is sufficient for stock in most of the soils where this variety has been raised; in fact, it has such a degree of resistance as is practically called resistant. Rovasenda, who has taken the trouble to inquire into this subject, esteems it rather higher, and it is a fact that in the commercial vineyards vines which have been grafted in this stock show up above all the others. Without any resistance this would be impossible; however, the resistance of this variety is so limited that in case of a graft where the affinity is defective or even more, where the soil is ill adapted for the Jacquez, its lack of resistance enables the phylloxera to first attack and finally destroy it.

The propagation of the Jacquez is not difficult and it is not necessary to raise this variety from seed, as Pulliat believed, and indeed it is not advisable to do so, for seedlings from a hybrid ~~do not~~ tend naturally to disassociate themselves into the elements of which the variety is composed. This disassociation is generally a retrogression for propagation where healthy wood is taken from vines which

have been protected from fungi, raising cuttings or grafts from this variety is not a difficult operation. The fault of the aestivalis in general, that they root with difficulty, does not show in this variety; it is apparently neutralized by the influence of the vinifera. Where cuttings have been properly stratified before being planted, 70% to 80% of them should grow. The vines may be grafted at all ages and success is much greater on the late vines with this variety than with the rupestris or riparia.

Its affinity for other varieties is usually good; the cion and stock unite readily and the point of grafting afterwards is hardly visible.

(Two and one half pages on the culture are here omitted, as it does not seem to have sufficient importance)

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VINIFICATION.- The wine of the Jacquez has always had the reputation of being first-class both in the amount of alcohol it contained and in its color, going well on this point with the wines of the Midi which are lacking in these two qualities. This variety has an advantage over the vinifera in that it will produce wine on irrigated plains of alcoholic content as high as though the grapes were raised on the hills. The fruit adds to the desirable qualities of this variety in that it may be left to hang on the vines without danger of its drying up or rotting. This permits the natural production of high class wines which are always in good demand on the market.

In America the wines of this variety are very poorly made. The high colored alcoholic wines that one drinks in Texas are made from this sort of grape; they are lacking in acidity and show a very strong blue tint and oftentimes, owing to lack of care, their wines are turbid and sour. They value Cynthiana and Catawba higher for wine making purposes.

In France the first wines made from the Jacques were found to be very good. In 1877 Camille Saint-Pierre in his analysis of American musts, gives the analysis of a sample of Jacquez secured from M. Douisset containing a quantity of sugar equivalent to 13.1% alcohol, and also an analysis of must secured from M. Gaston Bazille which showed an equivalent of 12.2% alcohol. Now, for wines of the plain, made from grapes which are only two and three years old, this is a remarkable richness. Pulliat recognized that in the wines of the Midi the wines of the Jacquez are superior to that of many grafted European vines and he was not astonished to see the jury in the original congress in Montpellier give this wine the gold medal. Opinions of various authorities, however, are divided on this subject. In the Congress of Montpellier in 1883 many were of the opinion that the wine of the Jacquez lacked body and was not desirable as a base and should only be used to impart coloring to the product.

MUSTS & WINES OF THE JACQUEZ (M. Bouffard)

Must

Wine

Remarks.	Year.	Density	Sugar Glucose	Acidity H2SO4	Alcohol	Acidity H2SO4	Dry Matter	Ash
Red	1883	11.00	175.80	7.20	10.30	4.06	26.40	2.70
White	1884	12.20	210.00	6.50	11.50	4.97	"	"
Red	1884	12.20	210.00	6.50	10.20	5.10	27.00	3.58
---	1885	"	"	"	10.70	5.13	24.30	"
---	1887	10.64	182.00	"	10.46	4.69	19.00	"
---	1888	"	"	"	9.65	5.70	"	"

WINES OF THE JACQUEZ (Analysis of M. Roos).

Year of Vintage	1890	1896	1890	1890
Remarks	Plains	Hillsides	Large fruit	White wine
Alcohol % in volume	10.1 deg.	11.7 deg.	of Sorres	Montpellier
Sugar per litre	3. gr.	2.00 gr.	1.40 gr.	Traces
Dry Matter %	31.10	31.30	24.75	18.00
Inorganic Matter	2.75	2.10	3.40	2.10
Alkalinity of ash expressed in carbonate of potash	1.10	1.69	2.55	1.24
Ditto in bitartrate	3.01	4.60	6.96	3.39
Cream Tartar	4.70	3.52	3.20	4.00
Total Acidity in H2SO4	5.60	6.14	4.60	6.00
Sulphate Pot.	0.37	0.34	0.40	0.22
Iron	----	----	0.011	0.021
Tannin	1.80	----	0.90	0.40
Coloration: ton	----	----	3eVR	0
" intensity			0.97	
Saccharometer deviation	-1.8 deg.	-1.5 deg	-0.40 deg	0
Density	0.9995	----	0.9993	0.9934

MUSTS & WINE OF THE JACQUEZ 1904. Analysis by Prof.
Bouffard & Ventre at the Montpellier Agricultural
School.

	Must	Wine
Density at 15 deg.	1082.8	998.6
Sugar corresponding to the density	191.2	
Actual Sugar present	205.0	
Alcohol		9.3 deg
Dry Matter corresponding to density	220.8	24.7
Dry Matter in degrees	229.8	28.9

(Table cont'd).

	Must	Wine
Sugar residue		Traces
Total Acidity in H ₂ SO ₄	6.45	4.50
Soluble Ash	3.54	3.44
Insoluble Ash	0.66	0.60
Total Ash	4.20	4.04
Alkalinity of Ash in Carbonate of Potash	1.90	1.80
Bitartrate of Potash		4.60
Tannin		1.2

Messrs Bouffard and Ventre remark as follows: "There is a great difference between the quantity of alcohol in the wine and what one would suppose to be produced from the must. Must from this variety alone has produced 10.2 degrees. They should be fermented on the stems and while fermenting they show a film on the liquid that is characteristically Jacquez. The bouquet and aroma are pronounced but coarse; the acidity is very weak and masked by the coarseness of the later extracts so as not to show it in the taste. The color of the wine is violet blue, a color which is inclined to change. Exposure to the air gives a blue precipitate and the blue or black metallic reflection of color which is formed by an oxide of the coloring matter and the small quantity of lime present. The natural lack of acidity in this variety makes it desirable to mix with other sorts. In order to fix the color of the Jacquez in another variety it is necessary to add the Jacquez in considerable quantity. (Page 391) To add a maximum of five degrees per litre of tartaric acid, or if it is desired to use citric acid, add two or three times that quantity."

These analyses show the absolute necessity of acidifying the Jacquez. None of the vines analyzed possess sufficient for stability or even to make fermentation complete. The question has been agitated as to whether it is better to use tartaric acid in the fermenting vat or in the wine after it is made. If added to the fermenting tank the expense is slightly greater because of the waste in the must, but this extra expense is largely compensated for by the gain which is shown in the action of the acid during fermentation.

(Rest of page left out).

(Page 392).

DESCRIPTION.- Vine very vigorous, of semi-erect habit; trunk strong, bark laying in thick strips; wood dull reddish under bark.

Buds conic, pointed; imbricated bracts of a wine colored brown; when bursting showing golden red with reddish gray network, followed by a general deep carmine tint. The same color is somewhat lighter on the under side of the leaf and extending on both sides clear to the edge of the leaf

Buds burst early in the spring. Young leaves thick; deep teeth on the edge of the lobes; thick reddish down on the veins at the under surface; netted veins slightly depressed below the surface of the leaf. While the leaf buds burst early, they are not thoroughly expanded until late, at which time the flower buds show as a dirty wine colored reddish cone.

Canes long, of medium size, almost straight, branches rather numerous with a bloom at the nodes, washed in bright purple in the early part of the season and showing a violet brown the latter part of the season, of a clear brown out toward the extremities. Bark cracking slightly and brownish on edge of the cracks toward the base of the internodes; rather long(8 to 12 c/m), almost cylindrical, regular shallow striations; nodes somewhat swelled, flattened, spindle shaped, rather large, with whitish or lead colored bloom. Pith slightly thick, diaphragms bi-convex, tendrils not continuous, stout, green, glabrous, bifurcated or trifurcated; leaves large when mature, long two or five lobed, generally five lobed, sometimes seven lobed on the shoots. Sinus between edge of petiole rather deep, rhomboidal, terminal and lateral lobes lanceolate, long and narrow, two series of slightly undulating, alternating teeth one of which is obtuse and the other short and mucronate; teeth glabrous, of a beautiful bright green on the upper side and of a more pale green with patches of silky hairs on the veins on the under side; veins rather large and well defined but not very prominent. Petiole long, cylindrical, enlarged at both ends, glabrous, washed with reddish brown in the latter part of the season, forming almost a right angle with the plane of the leaf.

FRUIT.- Bunch large, long, 20 to 28 c/m, cylindrical or cylindro-conic, sometimes shouldered or one sided, very seldom on both; peduncle long, enlarged at the point of insertion and sometimes with a rudiment of a tendril in the middle, of a clear green color all over, not woody but hard at the point of insertion; pedicels long with occasional small conical excrecences. The berries separate from the pedicel with difficulty leaving a small deep violet black pencil adhering to the pedicel; berries rather loose, of green color, medium or below in size (10 or 15 m/m), spherical, of a deep violet black with considerable bloom color of skin on the inside of a deep violet red, having rarely small excrecences with an areolar surrounding. Stigma prominent in an eccentric and hardly noticeable umbilicus; skin rather thick, rather elastic, flesh slightly pulpy, juicy, juice highly colored, of a wine colored red, no especial flavor. Seeds one to three to a berry, of medium size, pyriform, chocolate brown in color; chalaza distinctly circular in outline and prominent, situated slightly below the center; raphe twisted and distinctly separate from the chalaza.

J. ROY CHEVRIER.

OTHELLO

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SYNONYMS.- Arnold's Hybrid, Arnold's No. 1, Hybride de Arnold No. 1, Canadian Hamburg, Canadian Hybrid, Challenge(?)

HISTORY & GEOGRAPHICAL AREA.- This is a French-American hybrid, originated by Arnold, a skilled hybridizer in America. The Othello was introduced into France in the first shipment of cuttings made after Planchon's trip to America. It was about 1875 that M. Leonce Guiraud

of Nimes selected and propagated this variety and it commenced to spread throughout our vineyards and became the object of consideration on the part of the growers, which was justified to a great degree by its great productiveness. The extent of its culture in its native country was limited owing to its susceptibility to various fungous diseases. (Page 161) The virulence of the attacks being less in Europe than in America, it did well in France and one may perhaps say that in the reconstruction of our vineyards, the culture of this variety preceded the use of grafts, or at least was synonymous with it. In Herault we find this variety first in the vineyards of Messrs Felix Sabatier and Jules Leenhardt where it surprised everyone by its adaptability to the marly soils. In the southwest Messrs Piola and de Malafosse sang its praises. In the east Messrs Robin, Gaillard and Champin stated that this variety would revive the hillside vineyards. Even the professors themselves imbibed some of this enthusiasm. Planchon, Millardet and Pulliat in many passages in their writings maintain the practical existence of this variety; all recommend the vine growers to depend upon this variety as a simple method of reconstructing their vineyards. None hid their admiration for this strong growing vine and no one appeared to protest at the unreasonable prices which were paid for the smallest cuttings. The agricultural reunion and the viticultural congress added this variety and recommended it both for a table grape and for wine. They listened to the testimony of the first cultivators of this variety and also listened to the words of nurserymen who naturally desired to secure some good and profitable variety both that it might be profitable to the vine growers and to themselves. It was impossible, for a time at least, for any pessimist to refer to this as advertising. By 1887 in Beaujolais and in the environs of Villefranche they stated that for four years the Othello had shown very slight resistance to the phylloxera. In the Chalonaise hills of Senecey Charles Perrier had two hectares of Othello totally destroyed because they had been planted on a site from which an old vineyard infested with phylloxera had been recently pulled out and the ground had not been disinfected between that time and the planting of Othello. At the school of Montpellier this variety was so unequal in different times and places that it puzzled everyone. In their ampelography Messrs Foex and Viala called the resistance of this variety doubtful and some years later in their fine "Adaptation" Messrs Viala and Rava^z give it 6 in the scale of phylloxera resistance. The confidence of the first days is unsettled. A national pride in the reconstruction of the vineyards had introduced the planting of this variety to such an extent that it became a serious injury. At the congress at Lyons in 1894 M. de Barbentane denied that the Macconais had favored the Othello.

(Skipped to P. 162. Unimportant and not worth translating).

COMPARATIVE AMPELOGRAPHY.- The Othello is the result of a cross between the Clinton and the Black Hamburg, thus baptized, probably, on account of its color, in memory of the dusky Moor of Venice. It is, then, a hybrid of the *labrusca-riparia* x *vinifera*. The Clinton, which Arnold used is, however, the Clinton of Canada which is quite different from the Clinton

of France. According to Madam Ponsot it is close to the riparia, and according to Champin, on the other hand, it is closer to the labrusca.

The Synonyms Canadian Hamburg and Canadian Hybrid are probably in reference to its Canadian origin. Challenge, which has been taken by some authors as a synonym, is not the same according to Champin, the Challenge being a totally different sort with small pink grapes, which it would be impossible to confuse with the large black Othello.

The Black Hamburg, which was used as the male parent in this hybridization, is another form of the Frankenthal. It is a large fruited forcing grape with enormous berries and insipid taste, which is appreciated, says Cte. Odart by hornets, wasps, and the inhabitants of Paris.

The riparia is very deceptive in that it looks like a cross between the labrusca and the vinifera; the Othello, however, shows unmistakable traces of its triple origin. The labrusca is revealed in the budding and in the tomentum of the leaf, in its tendency toward sub-continuity, in its tendrils, in the pulpy flesh and in the foxy berry and also in the powerful root system which feeds it in the clayey soils. The riparia shows in the long canes, in its resistance to the phylloxera, which is almost sufficient in favorable situations and in the tendency of the roots to remain shallow and spreading. The vinifera shows in the form of the leaf, in the form of the cluster and in the fact that the roots show a love for limestone. The Othello has a characteristic appearance which enables one to recognize it readily among other varieties. Champin says its deep green foliage thick and crowded, the length of the internodes, the early clusters of flowers which show up before the strawberries, the large bunch and berry, which much later covers all the branches, form compact, bluish black mass, all of which gives a general aspect of great vigor which is pleasing to the eye and cannot be forgotten when once seen.

There are many forms of the Othello. Some think that two varieties exist, one with the swollen, puckery leaves and a foxy taste, and the other with smooth leaves without the foxy taste, and a sub-variety with a very large berry. These differences are slight and not permanent, depending apparently upon soil and climate. It is apparent that the Othello is less effective in the northern than in the Midi, in sandy soils than in calcareous soils, and that the berries are much larger in the fertile alluvial soils than in the arid soils, but cuttings taken from non foxy Othellos with large berries planted in the vineyards which are less favorable to this variety, do not retain any of these foxy qualities.

In spite of its feeble resistance to the phylloxera the French hybridizers have used the Othello to a considerable extent in their crosses, probably on account of the large size of the grape and because of its resistance to Botrytis cinerea. Caudero has used this in many of his combinations and in particular in his variety to be used

as stock, No. 1613 which is Solonis X Othello which shows a moderate resistance to phylloxera and a remarkable adaptability to marly and very limy soils. For direct producing by varieties the 802, Othello X Rupestris Ganzin shows its maternal origin in its foliage but not in its fruit which shows a very small berry. Castel has used the Othello in originating new sorts, but only in the second generation after crossing with rupestris. As instances amongst his numerous seedlings with one third to one fourth are numbers 115, 11113, 1720, 1832, 3431, 3534, and 4633. Gaillard has used the Othello in the same way in the origin of his No. 2 and 21.

CULTURE.- The vigor of the Othello is good or very good, depending on the natural fertility of the soil and the number of phylloxera present in the same. It does best in new clayey, limy soils; under these conditions its resistance to the phylloxera is greatest and it is only moderate on the dry shallow hills in the middle of France. The resistance is sufficient for all practical purposes in the central portion and assures a longevity that is more profitable if some measure is taken to shelter the vines against frost. This agrees with the statement of Millardet, who says "I think that in good soils which are rather light, the seven years of resistance to the phylloxera which the Othello shows at the home of M. Guiraud could be doubled in Languedoc and Roussillon and am strong to believe the same for the Southwest, East and Center." In spite of this statement of Millardet there is that of his neighbor, Daurel who calls the Othello "the most resistant of all the red hybrids." There is good reason for these statements for if one will note in the discussions which take place at every congress and which fill the viticultural press at all times, one will notice that those who champion the Othello are frequently more numerous than those who are opposed to this variety. As a direct producer this variety cuts a good figure when compared with more recent and more praised hybrids. Its good points are not superlative but with good cultivation, fertilization, spraying, and making of wine it is a profitable variety.

164 It is easily propagated either by cuttings or by grafting. It has fine canes which are long and strong and root very rapidly without any extra care. In 1889 M. de Candolle reported a success of 90% in the nursery of Haut-Ruth in Switzerland. The shoots, it is true, are easily broken off and must be tied to the trellis early, but the wood ripens well and the mature canes are very hardy. This variety is prolific and does best with long pruning. It does well with the cordon system but does equally well with the Guyot system, either simple or double, depending upon how much the land has been fertilized. It should be planted 1 50/100 meters apart both ways. Its root system is strong and somewhat fleshy and, as is usual, with this system, the roots do not want a deep cultivation. Vial calls attention to the love for limestone soils which this variety shows, and the professor estimates that it would permit of profitable planting in a soil which has as high as 30% to 40% of carbonate of lime.

Its juice which is similar to that of many of the vinifera varieties is It is a good vine to graft like its grandsire the Frankenthal; to propagate it more rapidly is more difficult. Its first partisans did not believe in the use of the American roots for a stock but Messrs Robin and Piola owned many hectares of Othello upon Taylor which did not shatter in any degree and have done very well in their way. I have often seen this variety in Bourgogne, vines of the Othello mixed with grafted vines. They are, under such circumstances, distinguished from the neighboring vines by their vigor and fruitfulness. This has given rise in the last few years to the idea that this variety would make a good cion to be grafted on other sorts. The only unfavorable trial which has been carried on to my knowledge has been given out lately by M. Rigaud, the president of the viticultural society of l'Ain (Vigne americaine, Feb. 18, 1889). To call attention to the propagation of this variety M. Rigaud has grafted it upon his old vines of Mondouse. After an excellent growth of three or four years these grafts commence to fail but when they were cut down close to the ground they regained their previous vigor. This is proof alike of affinity between the Mondouse and the Othello but this peculiarity which is seen also on many American stocks, for instance hybrids of the Linsecumeii and the Rupestris do Lot, does not show when this vine is grafted on the Riparia nor upon the Rupestris, nor upon the Jacquez, and it may be said that, generally speaking, Othello makes a good graft.

The rather late period at which the buds burst, and particularly the thick, cottony tomentum which envelops the buds, protect it against the late frosts which ravage periodically in our southern vineyards. It blooms early and the blooming season passes rapidly without the blossoms falling from the vine. It will commence to bear by the third year and the number of bunches, three or four to the cane, even from the late wood, makes this a very fertile variety. It will give at least eighty hectoliters to the hectare and sometimes under the most favorable conditions will run as high as 150 to 200 hectoliters. It ripens in the second period but the berries hang upon the vine for a long time without rotting, permitting it to be raised in very cold regions.

WINE OF THE OTHELLO (Analyses of M. Bouffard)

These are the periods of vegetation in the Midi, where raised at the school of agriculture at Montpellier:

Name of Variety	Budding Time	Flowering Time	Ripening.
Othello	1st to 7th April	12th to 28th May	24th Aug to 3 Sept.

VINIFICATION.- The pulpy fruit of the Othello is disagreeable to eat on account of its foxy taste. The partisans of this variety hesitate to call it foxy and soften the expression by referring to it as of a flavor peculiar to the class, or as having a bouquet slightly musky. This grape contains a moderate amount of sugar and much acid; it is, consequently, capable of being made into true wine if not good wine.

Its juice which is similare to that of many of the vinifera varieties is normal in quantity. M. Caille has given the standard of this juice as being about 71% but samples which I have secured have given me a figure slightly superior to this. The wine is better if the fermentation proceeds rapidly and is not too prolonged and the maceration which occurs in the fermenting vat increases the foxy taste in the product very noticeably. Frequent rackings with aeration are strongly recommended during each year. In the southern sections the must is extremely acid and requires Chaptalization; on the other hand, in the middle districts the insufficiency of acid in the wine even causes the blue sickness in the product. With the wine as with the must the Othello is very variable, depending on whether the province from which the sample was secured was southern or northern.

MUSTS OF THE OTHELLO

Province	Year of Vintage	Density Beaume at 15 Degrees	Sugar in glucose	Per litre	
				Bitartrate of Potass.	Acidity in Tartar. Acid
Montpellier (Herault)	1882	12.0	206 gr.	----	5.10 gr.
Ditto	1883	12.2	180 "	3.19	8.00 "
Vienna(Isre)	1902	8.0	127 "	----	13.35 "

In the central district the Othello makes a very good wine according to testimony of the analyses and reports upon the flavor by M. Bouffard, who says: "This is an alcoholic wine with a beautiful bright red color, equal to 6 Aramon. It is a little rough and some samples have a slightly foxy bouquet. It improves with age and the foxy flavor referred to disappears almost wholly."

It is quite productive, 80 hectoliters to the hectare being an average crop. If its resistance to the phylloxera proves sufficient, this variety will occupy an important place in commercial vineyards.

WINE OF THE OTHELLO(Analyses of M. Bouffard)

(See next page)

WINE OF THE OHELLO (BOUFFARD)

Source	Year of Vintage	Density	Alcohol	Acidity in H ₂ SO ₄	Bitar- trate in 100°	Dry Matter at 100°	Glucose in Vacuum	Glucose and Lactate Matter at 100°	Soluble	Ash	Total
Nat'l School of Agriculture of Montpellier	1883	995.6	11.1deg	4.3	3.10	27.2	29.4	11.6	1.55	0.72	2.37
	1884	995.4	10.4 "	3.8	3.40	24.1	29.0	9.6	1.42	0.44	1.86
	1884	995.2	8.3 "	4.2	2.80	19.5	24.0	8.6	1.85	0.71	2.56
M. Albagnac (Herault)	1884	995.2	8.3 "	4.2	2.80	19.5	24.0	8.6	1.85	0.71	2.56
M. Barral (Herault)	1883	994.7	10.5 "	3.3	2.85	25.7	27.0	10.0	2.30	0.72	3.02
Av. Composi- tion.		995.2	10.0 "	3.9	3.04	24.1	27.3	9.95	1.78	0.64	2.42

N.B. The next three pages contain various analyses of musts and wine of this variety with comments thereon. The tables and comments are as various as the different men making them. There seems to be a great difference of opinion regarding this sort.

DESCRIPTION.- Vine vigorous with a rather upright appearance; trunk strong, old bark soon dying, cracking and peeling off. Root system fleshy and large.

Buds downy, reddish, later whitish, tinted with red at the end of the young leaves. Flower clusters with patches of light down and showing carmine at the extremity. The young leaves are distinctly trilobed, sometimes quinque-lobed, white on their under surface with pink showing on the sharp toothed periphery. Canes of medium length almost cylindrical, rather small, smooth and glossy green, and showing cobwebby tomentum; canes of late summer varying from deep hazel to yellowish brown toward the ends, slightly flattened and oval in the larger canes. Internodes medium to short, shallow, inconspicuous striations. Nodes slightly prominent, covered with with a slight bloom; tendrils sub-continuous, small, green, with a light wooly down, bifurcated, showing frequently a small leaf opposite the first bifurcation and sometimes a large leaf at the extremity. Leaves large, round, showing sometimes twenty-five centimeters in diameter, rarely flat, almost always more or less crumpled, thick, five lobed, superior sinus deep and inferior sinus well marked, basal sinus closed with sometimes the two lobes of the leaf overlapping. Blade of leaf blistered, deep green on the upper surface, downy and pubescent below, teeth in two series, rather sharp, pointed and irregular, the larger teeth separated by one or more smaller ones and the terminals of the leaf showing a wide point. Veins of leaf pale green above and whitish green below with patches and flecks of hairs. Petiole round, green, ~~and~~ very large and of medium length, covered with awl-shaped hairs, thick, very short, with small wooly filaments at the end, forms an obtuse angle with the plane of the leaf blade. The leaves drop medium early in the autumn, preceded by a marbling of the leaf itself and later turning yellow; this marbling process commences rather early.

FRUIT.- Clusters usually two placed opposite the third and fourth leaves, and if there is a large cluster it is usually found opposite the sixth leaf, that is, with an intermission at the fifth leaf, and if by chance, once in a while this fifth space is filled it is by a tendril with but rarely a bunch of flowers at the extremity. Cluster large, winged, cylindro conic; peduncle strong and short, dirty green, hard and enlarged at the point of insertion; pedicel rather long, of medium size, pencil inserted in the fruit cylindrical and wine colored, slightly adherent. Berries above medium, almost globular, slightly elongated, uniform in size and well crowded but not compressed, of a very bright beautiful black color with blue bloom. Pruine abundant, the umbilicus slightly marked and often eccentric; skin thick, tough, rather coarse, and bitter tasting, fleshy, very pulpy, slightly juicy, slightly sweet but vinous juice of a pinkish color and of a more or less foxy flavor when completely mature, which is in the second period. Seeds to the number of one or two large and elongated, resembling in their form both the seeds of the vinifera and the labrusca.

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SYNONYMS.-- Noe(Champin).

HISTORY & GEOGRAPHICAL AREA.-- The Noah is a hybrid either directly or as the result of a reversion to a cross earlier than its direct parents. It is a seedling of the Taylor planted in 1869 by Otto Waserzieher of Nauvoo, Illinois. It was given by him to Bush & Meissner and fruited for the first time at Bushberg in 1873. Three years later it was placed upon the market and for some years it was quite popular in the United States on account of its vigor, its health, and the high alcoholic content of its wine. But its popularity, which was mentioned in 1881 by Riehl of Alton and Balsiger of Highland, was short-lived. According to Munson it is scarcely cultivated in the United States outside of Missouri and New York, where it is used to a very slight extent as a wine grape.

In France the success has depended on the section in which it is raised. It has not done very well in the Midi. It is rather favorably commented on by the growers in the Center, while in the east and above all in the southwest, notably in Armagnac where it is quite warm,

it has done quite well. It was used at first as a stock but in the last few years it is attracting some attention on account of its resistance to various fungi. Plantations of some size ****

172 have been planted in the valley of the Saone and in certain prairie sections which are subject to frost. Under such conditions it produces very regular crops which are made into white wine. In the north it is raised at considerable altitudes but has not given with M. Berget as good results as had been hoped for. Outside of the warm soils which are shallow and calcareous, and to which it is not adapted, like the Othello it has been introduced to a slight extent and is disseminated in all the grape growing districts in France without being raised to a great extent in any of them. Although the culture is widely extended, depending on the fashion and advice of the day, it appears to be at present actually diminishing in importance. It has been the subject of animated discussions at the viticultural congresses and has had many strong friends and bitter enemies.

According to some it was to be the universal saviour, the variety which was, above all, capable of giving without expense and without trouble, both wine and brandy, which would compare favorably with that from the grafted varieties; others condemned it as a feeble, half American hybrid of only half resistance and susceptibility to chlorosis and which gave a wine practically worthless. Most of the growers have been inclined to judge this variety too hastily. The distinguished growers Messrs Cazeaux-Cazalet and Daurel in the southwest, Pulliat and Bender in the east deprecated the lavish praise of this variety, being actuated by a sense of what was best for the viticultural future of our country. The Noah will never be, according to them, a variety of more than transitory importance which they believe will, like the Othello, render certain service but will never be accepted as a standard variety by the better informed grape growers nor by the societies of standard reputation. This was a part of the great discussion which was waged for ten years between those who advocated the use of the American varieties and those who believed in using European varieties with appropriate fungicidal treatment. This involved, of course, the question of ^{the use of} direct producing vines and those which were grafted. On account of the phylloxera, which has been an important factor in deciding the results on this question, and on account of the taste of wine consumers, the victory seems to be on the side of those who advocated the grafted European vines. In other Latin countries which follow France in wine matters, they have from time to time planted and abandoned the Noah the same as with us. In Roumania, for example, M. Nicolescu, who from 1889 to 1896 experimented with this variety in the state nurseries, found it to have so many failings that he refused to give it a place amongst the older local varieties which were being successfully raised by the use of resistant stock. In Italy and Spain they have had similar experiences and similar results. *****

172 COMPARATIVE AMPELOGRAPHY.-- The name Noah was given by the American originator of this variety on account of the high quantity of the alcohol which is found in the wine. The accident, which, according to the legend, came to the patriarch Noah, would have been impossible

had he used the wine of the Chasselas or the Folle-Blanche but would have been very easy with that of the Noah. There are no synonyms of the Noah outside the French translation of the English name and this translation ~~was~~ suggested by Champin has never been extended.

A seedling of the Taylor with or without extra hybridization, which no one knows, the Noah shows, like most seedlings of this variety most of its good qualities and also its weaknesses. The Taylor is a hybrid of the labrusca X riparia with probably also a little of the Monticola blood. It is a small producer of white grapes. The vine is partially sterile owing to a faulty conformation of the floral organs. As a stock for grafting, it has maintained during more than thirty years in soils not very favorable to the phylloxera grafts which are rather vigorous and very fruitful. The Noah is more resistant to the phylloxera and more fertile than the Taylor, but is also more susceptible to calcareous chlorosis. The Noah shows the labrusca and the riparia blood more than the Taylor; it shows the riparia in the health of its foliage and the labrusca in its adaptability to cold, compact sub-soils, and also to the larger berries and their more foxy pulp.

This is a beautiful variety with leaves which are a dark, glossy green, large and flat. The terminals of the canes are of the appearance of chamois and the clusters a glaucous green. The Noah has at times been confused with its relative the Elvira. In the Elvira the leaves are not lobed and are folded in funnel shape; the clusters are smaller and are much more foxy.

There is a variety raised in Switzerland known under the name of Noir. This variety, which is mentioned in Carl Bronner's catalogue and in the Ampelographie du Comte de Rovasenda, has nothing in common with the variety here described. It would be much better if this name were not also applied to the Gaillard No. 2, a red hybrid which is a cross of Othello and rupestrisX Noah, which shows in a very striking manner in its foliage and in the color of its wood and in the fruit of its cluster the influence of its white-fruited parent. ^{Cordon} This variety is very productive, Champin says excessively so wherever it is pruned long and on the cordon system the Noah will give three and even four clusters to the cane and is sometimes continuously so like the labrusca. It grows very well from cuttings and from grafts. In new and deep gravelly sandy soils it does particularly well; the trunk becomes very thick and where used as a stock it will become as large as the vinifera which is worked upon it. Some of the Gironde growers tell M. Jurie that in their opinion there is more alcohol in the wine where this is used as a stock than where the riparia is so used. It is particularly susceptible to the deleterious use of lime and in the field trials it has fared about as well in this respect as the Othello. The Noah has been seen flourishing alongside the Othello which was going to pieces in s soils which contained an excess of carbonate of lime; on the other hand, in the sandy, clay soils, the Othello does the best. The phylloxera resistance of the Noah is quite high for a hybrid of the labrusca; it is 13, whereas the Taylor is only 11 and the Othello 6. On account of this resistance it is probable that a hybrid of this blood somewhat more healthy than it is itself would be very well adapted to certain soils as a stock, particularly the compact, cold soils. Since these

hybrids do not exist, however, it is necessary to consider this variety as a direct producer.

(N.B. Paragraph left out. Of no importance.)

PERIODS OF VEGETATION OF THE NOAH.

Place of observation	Variety	Budding Time	Flowering	Maturity
Montpellier	Noah	Apr. 7 to 18	May 24 to 28	Aug. 20-25
Bucharest	Noah	" 8 " 16	June 1 " 10	Sept. 2

When the Noah is raised in the northern climate naturally the periods of vegetation are made later, but no matter how far north it be raised, so far as it can be raised at all, the Noah is a late bearing sort, which nevertheless, matures its fruit early, at least early enough to assure as much alcohol in its wine as would be found in Gamay and Chasselas.

It is remarkably resistant to the frost of winter, probably on account of its very healthy wood, which is rather hard and well ripened by the month of July. It also escapes the late spring frosts both on account of its habit of late budding and also on account of the cottony tomentum which protects the buds. Furthermore, in case the buds are frosted the variety appears to have little difficulty in forming new ones. It is this regularity of production which has inspired M. Bender to speak to the grape-growers of Macon as follows: "I appreciate that this variety cannot be compared with the Pouilly-Fuisse, but at least one gathers a crop once every year on the plains, even those who train their vines high."

This variety is slightly susceptible to the oidium on the bunch and to the mildew on the leaf. It is sometimes attacked by the anthracnose, white rot, and the brown rot. At the time of his return from America Violla told us that in the United States this last disorder was very serious, also that there was another disorder which affected the labrusca and their hybrids which he called absorption. The reason for the success of the Noah on the Continent, as in the case of the Othello, is the ease with which it may be defended against black rot. In the Southwest where this disorder is very serious, the Noah is generally less susceptible than the vinifera and is sometimes altogether free. Thus at the home of M. Dubuc, President of the Cour d' Agen, who referred to it in 1895 as healthy and sound in the midst of viniferas which had been devastated in spite of their treatment. But this resistance is exceptional.

(Part of text is here omitted).

VINIFICATION. The good cultural qualities of the Noah are counter-balanced by the difficulties in its vinification. The notably foxy taste of the labrusca, more or less disguised it is true, depending on the skill of the wine maker, but nevertheless showing injuriously in the wine. This disagreeable and persistent flavor is in direct proportion to the maturity of the crop, to the heat of the climate and to the lime in the soil. Upon the hillsides where the finest viniferas develop their bouquet the Noah also develops its wild pineapple strawberry perfume. In the cold plains on a sandy soil the crop shows very little of this taste.

The Noah is very difficult to press and a large quantity of the product is pomace, according to M. Cailler 26%. The hard, pulpy berries are inclined to pop out of their skins under the pressure, and great care must be taken to keep them out of the must. This inconvenience has induced many wine makers to allow the whole crushed mass to go in the fermenting tank and lay there for a day or two before being pressed, but this method is faulty because it may taint the wine and certainly increases the foxy flavor. The best method is to use a high cylinder and strong press and the part that holds the cheese should be composed of close set slats something like the one that is used when one is pressing olives. In all cases is it necessary to avoid leaving the husks with the must, as this augments the objectionable foxiness above referred to. M. Malegue has successfully made from this variety a sort of Muscat wine. His methods are special and his success is rather exceptional; it, however, should encourage others. After treatment in the vats the wine of the Noah is usually dry, alcoholic, and slightly rough. It is not as smooth to the tongue as most of the white wines of the vinifera are when made. It reminds one of the astringency of the Clairette and the Melon, and particularly of certain dry wines which are made in the fermenting tanks like red wines. Vicomte de Saint-Pol, speaking of the wine of this variety, says: "It is white, of medium quality, beautiful color, slightly yellow, rather alcoholic, the quantity of the alcohol increases with the age of the wine, varying from 10% to 14%, slightly less in the Center; it keeps well." This is indeed one of the chief merits of this wine. It keeps as well as though it were solid. The fruit also keeps readily. The richness in alcohol and in dry matter protects the wine of this variety against ***** many bacterial diseases. ~~the wine varies in different sections and with different methods of making~~

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The wine varies in different sections and with different methods of making. It has consequently been the object of very contradictory reports. In the Southwest and particularly at Graves in the damp, gravelly, and non-calcareous soils the Noah is considerably flat; the foxy taste is there very slight and it furnishes, in the estimation of the local consumers, a wine which resembles in its musky bouquet the Sauvignon, one of the great wines of Sauterne. The viticultural section of the Agricultural Society of Gironde, on the 29th of November, 1883, judged several samples of American wines and two samples of wines of the Noah of 1881 and 1882 from M. Piola in Palus

were declared to be the two best wines present and better than many of the white wines. M. Froidefond, in a report on American grapes cultivated in the experimental field at Souis in the following year expressed a fear that this variety would not have sufficient resistance to the phylloxera. "It is regrettable," says he, "that this very fruitful variety which gives a wine which would be accepted in the absence of the very best, offers no guarantee of the vineyard remaining permanent." It was not only at Bordeaux that the Noah had come to stay. At Lyon a committee of the local society samples wine of the Noah in December, 1885. Two years afterwards when the Pomological Congress of France was held in this town, M. Sylvestre, who was on the local Viticultural Committee of the Congress is said to have voiced the general sentiment when he said of the Noah: "It is a very good producer and makes a vigorous and permanent stock."

Nevertheless, there were many who objected to the invasion of these foreign sorts. Othello and Noah are, as we have said, the best known of the foreign sorts and they have been spit upon in every Congress in the name of the preservation of the sacred native varieties. The market was affected by this talk and refused wines of the Noah. In this case it was evidently necessary for the makers of Noah wine to sell it as the wine of grafted native sorts. The Noah wine is made early and some one or another of the wine makers, fearing that a variety which matured so early would be lacking in alcohol, added sugar to the must, but finding that the sugar was superfluous, since the pure Noah must give 7% or 8%, they watered the must and this occasion which was hit upon and was fraudulent makes a sort of white wine very smooth. In spite of its being condemned by the code of all viticultural countries, it furnished a simple method of loosening the foxiness of Noah wine. The foxy taste, according to M. Martinand, is due to a diastase which may be found close to the seeds and which increases with the maturity of the grape and disappears if the must be thoroughly aerated or the berries be thoroughly dessicated. A portion of the good effect of this process is derived by frequent rackings and even by stirring so as to allow the access of oxygen as has been counseled by various ingenious makers. But all of the foxiness which is found in the berry is not localized in the interior; it is also found in the periphery, also on the skin and mixed with the bloom. This is shown by the fact that if foxy grapes are washed for some time, they give a wine that is almost neutral. The advice has been given to the wine makers that in making this variety into wine they should not press immediately but should lay the bunches on the panniers on which they are gathered then water them very copiously and then should leave them over night covered by this artificial dew. On the following morning an odor will be found which is the very essence of the fox exhaling from the pannier. The grapes are then pressed with vinifera grapes below, and the must mixed with the white must of the viniferas for fermentation. *****

In no case should the Noah be allowed to ferment on the husks, for this will always make the wine yellow and very foxy.

The use of pure yeasts gives sometimes the most excellent results. Proof of this may be found in the remarkable work of Messrs Kayser, Martinand and Jacquemin. As it is impossible to quote all of this here I shall give only the experience of M. Perraud in 1890 whose products I have had the honor of testing. From many yeasts were selected some which were considered best in lessening the foxiness of the Noah. Of all of them M. Perraud decided that the yeast of the Sauterne was best. Here are the results.

Nature of Fermentations	Alcohol	Acidity	Dry Matter.
Noah Sauterne	10.4	9.9	26.5
Noah Check	8.9	9.7	26.5

The action of the yeast is not only shown in the diminution of the foxy taste but also in an increase of the alcohol and in a more prompt fermentation. Numerous experts have tested these wines and testified to the success of the experiment the year following that in which the wine was made, but I am of the belief that this success was not permanent. Some trials have been made at Vienna by M. Garon and it is from following this experiment that I am prompted to say that the Sauternization of the Noah gives only a transitory benefit. Little by little the bad ferments, paralyzed but not dead, regain their vitality and succeed in changing the ethers and the bouquet. In order to insure permanency of results it is necessary to sterilize the musts before the addition of the yeasts. M. Rosenstiehl has originated a short method of doing this but this process, while it has given complete satisfaction with the Othello, completely failed with the Noah and the Clinton. It appears that the best anyone can do today is to follow the old, empirical practice above referred to of watering the grapes before pressing and taking care to mix with white vinifera for fermentation and also to rack the wines early and frequently. In this manner one obtains a white wine which is common but very drinkable, is accepted by the market, and tolerated by the consumer.

We here give different analyses which show the section where the wine is made, the composition of the must and of the wine.

Source	Variety	Time of Vintage	Average Weight per Vine	Time Fermented	Stem %	Sugar
Roumania	Noah	Sept 11	0.515	5 Days	4	14
----	--	" 25	1.000.	"	"	14

MUSTS OF THE NOAH

Analyzer	Source of Sample.	Year	Density	Sugar (Glucose)	Acidity in Sulph. Acid.
A. Bouffard	Montpellier (Herault)	1886	12.7	228	5.20
L. Caille	Vienna(Isre)	1901	10.4	178	6.53

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WINE OF THE NOAH (Bouffard)

Province	Year of Vintage	DENSITY	ALCOHOL Deg.	ACIDITY IN H ₂ SO ₄	BITART. POTASS.	AT 100°	IN VACUUM	GLYCERINE SOLUBLE	INSOLUBLE	TOTAL
Montpellier	1884	992.0	11.2	3.60	2.92	21.5	24.8	9.4	1.11	0.58 1.69

WINES OF THE NOAH

Analyzer	Source of Sample.	Year of Vintage	Alcohol Deg.	Acidity in Sulph. Acid	Dry Matter	Tannin
A. Bouffard	Montpellier	1886	12.35	4.46	19.50	
J. Perraud	Villefranche (Rhône)	1888	8.3	5.90	17.60	
-----	-----	1890	8.4	8.81	24.50	
A. Bernard	Cluny(Saone et Loire)	1896	8.75	9.79	22.50	
J. Revol	Lyon	1902	8.30	6.65	21.38	0.32

The brandy made in the Southwest from the wine of the Noah was first manufactured with great hopes of success but these have not been realized. In 1884 M. Lespiault made five hectoliters of this brandy at 52 degrees from wine of the Nerac vineyards. Experts at the Agricultural Society of Gironde declared this brandy superior to the Armagnac and that it would be in keen demand by the manufacturers of certain fancy liquors and fruit p preserves but they have been unanimous since in Charente and Armagnac in stating that they find in the brandy of the Noah a roughness and a peculiar bouquet which is much inferior to that found in brandy of the Folle Blanche. If the vineyards of the Noah are of considerable size in the Southwest it is then on account of the fact that this variety is easily protected from the black rot and not on account of the excellence of the product.

DESCRIPTION.- Vine vigorous; trunk large; bark in raised irregular strips; roots strong and fleshy.

Buds downy, of a reddish white, tinted with red at the tips, small, slender, covered with reddish hairs, rather late in bursting, young foliage doeny, pale green with carmine on the central nerves and along the edge of the under surface, three lobes, both sides covered with a light down which soon disappears. Teeth long, irregular; bursting late and showing at that time the young clusters of green flowers covered with a whitish wooly down.

Canes long and appearing slender on account of their length but really rather large, sometimes sinuous, considerably branched, the herbaceous canes green, almost glabrous, glossy and rugose, streaked with grayish purple and covered with glandular hairs, the canes of late summer of a brownish red, more or less deep depending on the soil. Internodes long with fine striations of regular grooves. Nodes prominent and conic; tendrils medium length, bifurcated, becoming purple as they mature. Irregular in their succession, sometimes continuous like the labrusca, sometimes discontinuous like the vinifera; this alternation is very capricious and variable.

Leaves large, entire, sometimes broader than long, three lobed with the teeth very sharp, after the manner of the riparia. Parenchyma very thick; superior lateral sinus slightly marked or only indicated by a depression; inferior sinus almost absent; sinus between petiole and leaf opening in a V; blade of the leaf of a deep green, glossy, glabrous on the upper surface with a cottony pubescence on the under surface and also a thick white down, showing a little red; teeth angular and large, very prominent where the inferior sinus is absent; veins strong, prominent, pinkish underneath, tinted with a bright red on top particularly at the branching points; petiole strong, covered with coarse hairs, often showing wine color in the latter part of the season, forming an obtuse angle with the plane of the leaf. Leaves drop late in the fall after turning to a yellowish color.

FRUIT.- Clusters generally three, rarely two or four, sometimes continuous and sometimes discontinuous like the tendrils; medium to large in size, cylindro-conic, sometimes roundish in outline, short, shouldered, compact and sometimes quite crowded; peduncle rather strong, short, twisted, of a dirty green color, enlarged and ligneous at the point of insertion at the stem; stem down amongst the grapes green; pedicel small and short, stocky, greenish, with wart-like excrescences, with enlarged terminal which is slightly prominent and somewhat flattened; pencil coming from grape colorless and very adherent to the berry. Berry medium or below; clusters well filled without being compressed; there are no small green grapes in the clusters; of unequal size, spherical and slightly quoit-shaped, of a glaucous greenish tint with much bloom; central but indistinct umbilicus; skin thick, leathery, very resistant, rather translucent, passing from green to yellow in ripening, which occurs at the end of the second period; flesh pulpy, not solid; juice colorless or slightly greenish, very sweet, foxy flavor; three rather large seeds.

J. ROY-CHEVRIER.

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SYNONYM. - Hybride d'Arnold No. 16.

HISTORY & GEOGRAPHICAL AREA- The hybrid which Arnold gave the name of Canada is the result of a fecundation of Clinton by the Black St Peters. Like its uterine brother Othello, it has never been successful in its native country on account of its extreme susceptibility to fungous diseases. More fortunately in France than in America, however, it profited by the enthusiasm for the use of direct producers which was felt when American vines were beginning to be used for the reconstruction of French vineyards. It has been propagated to a considerable extent at least in Bordeaux and Burgundy, where its early ripening period and the very good flavor of the fruit have given it a certain popularity. In the Midi, on account of its lack of productiveness and susceptibility to the phylloxera, it was discarded at an early day, but I believe it is not now being cultivated to an extent worthy of being mentioned even in those sections where it was most popular.

In 1887 Pulliat wrote that had discarded the Canada on account of its lack of productiveness and insufficient resistance to the phylloxera in dry soils and Messrs Guiraud, Falcoz and Lambel stated that the Canada perished much quicker than the Othello. It was also at this time that the Burgundy experimenters Messrs Louis Maldant and Guillon, among others, pulled out their vineyards of Canada in spite of the fact that this variety made an indisputably good wine when combined with the Cote d'Or.

181 In the southwest region, where the climate is more humid and the phylloxera not abundant, the Canada was cultivated for some time. In 1891 M. de Malafosse, in speaking of new vineyards in Fronsac, both grafted and grafted upon resistant roots said that the Girondin grape growers were of the opinion that the mixture of the Canada grapes with those of the Verdot lowered the quality of the vinifera variety. M. Andrien Berget found this variety also in the famous vineyard which he discovered at the port of Amiens, but there were only a few vines which they soon ceased to cultivate.

To summarize the above statements, it may be said that while the Canada was raised to a considerable extent at one time, it is raised very little today. It is seldom that one runs across the vine even in the schools of agriculture or in the collections of enthusiastic amateurs, for even they hardly care to raise a variety which is so unprolific as the Canada.

COMPARATIVE AMPELOGRAPHY.- There was a plant called Canada or the Vine of Canada which may be found described in the writings of most of our ancient authors, particularly in Sachs and Jacques Cornut, under the name of *Vitis Canadensis Americana*. This vine without leaves and without stamens which Sachs mentions having seen in the 17th century in the botanical garden at Leyden, in the Royal Garden at Montpellier, and also in the Paris garden at the Faubourg Saint-Victor is not a true vitis. It is not, therefore, necessary for us to mention the differences between it and the modern Canada of Arnold. This hybrid was named Canada by its originator, the Canadian Arnold, who was born in Paris (Canada), in honor of his native country. His birthplace is a part of ancient France which remains Latin in spite of its Anglo Saxon exile. This origin can only increase our sympathy for the Parisian hybridizer of America and for his productions which seem to have inherited some of the qualities of our French varieties.

A hybrid of *Labrusca* X *Riparia* by *Vinifera*, the Canada is primarily *vinifera* in its appearance and also in the quality of the fruit, and also, unfortunately, in its weaknesses. The *labrusca*, which shows so prominently in its brother the Othello, is completely masked in this variety; there is a suspicion of the *riparia*, perhaps, in the sinuous slenderness of the shoots and in the acuteness of the lobes, but the general appearance nevertheless is that of a vine in which the *vinifera* predominates. One finds also that this *vinifera*-resembling foliage is affected by the mildew and the roots susceptible to the phylloxera and the fruit shows a flavor very similar to the French varieties. The Clinton, which served as the mother of this variety, is the Canada form of the wild Clinton, a sort of *riparia* from which the Othello originated. The father is the Black St Peters, better known as the Black Alicante.

This course was used by Allen to produce other similar hybrids. Allen's #2 is the Cornucopia; his #8 the Brant; and his #16 the Canada

These last two show so many common characters and a general resemblance which is very striking; they have been confused in France so often that Bush, Meissner and Champin felt obliged to differentiate these two varieties by description, which we will repeat. When the Brant bursts its buds in the spring they are at first ash colored with a little pink toward the edges, but very soon take a wine colored tint like that of the Violet Chasselas. The buds of the Canada are at first whitish, then a clear green without any pinkish tint. The leaves of the Canada are less deeply lobed than those of the Brant and are of a clearer and more yellowish green. The canes of the Brant are of a deep red with long internodes; those of the Canada are of glabrous green and much shorter jointed. The flowers of the Canada precede those of the Brant by some days. The cluster of the Canada, which is not without a certain resemblance to that of the Pinot, is cylindrical and very compact; that of the Brant more loose. Finally, the wine of the Canada is very good, in fact, the best of the American wines, and much superior to that of the Brant, which shows a very pronounced elderberry flavor. M. Piola, who *****
182 found these two numbers mixed when they were received by him, wrote to ask a method of distinguishing them. He was told that the Canada had a greenish white shoot and small cluster, the Brant having a reddish shoot and a cluster which is more elongated.

In his *Essai d'Ampelographie Universelle*, the Cte. de Rovasenda gives Allen's Canada as an American hybrid vine with very beautiful white fruit(?). He also mentioned as of lesser importance a black variety and even a pink variation of this kind, all of which are totally unknown to us.

This American hybrid has been re-hybridized in Europe and used in the effort to secure better stocks and direct producers upon this continent. From seedlings of 1882 of Canada X Riparia, M. Cauderec obtained his Nos. 2401 and 2402; these were put on the market in 1889 and are given as doing well in calcareous soils. They showed no superiority to the riparia in this respect and soon fell into oblivion. From seedlings of the same year of Canada X Rupestris-Ganzin, M. Couderc saved two for direct producers which he offered to the public in 1888; these were his 3301 and 3303. They are of medium vigor, small fruit, black, rather early, but hardly more prolific than the Canada and with a rough, disagreeable wine. The #3303 shows more rupestris and more bushiness than the #3301 and is less susceptible to the mildew. Their resistance to the phylloxera, without being very high, is noticeable and superior to the Canada. They are difficult to cultivate on account of their bushiness and stubbornness; they have consequently been abandoned even by amateurs. In deep soils which are free from lime, where they have been accidentally tried as stock they show a prolificness which is very regular with Pinot and Gamay grafted upon them. We must mention still another of the direct producers derived from Canada which is #5703 of Oberlin. This is a Canada X Rupestris. It is quite resistant to the oidium but very susceptible to the mildew and its resistance to the phylloxera has not been determined.

CULTURE & WINE MAKING- This variety is small and of not particularly striking appearance and takes root readily from cuttings. Of the numerous persons who tested this variety when it was first introduced M. de Candolle is the only one who reported its capacity in this direction as only mediocre (Vigne americaine, June, 1891). The large, fleshy roots of this variety indicate that the vinifera characters predominate and also that it is the legitimate prey of the phylloxera. Messrs Viala and Ravaz gave it only 4 in the phylloxera scale but they recognized that it has a rather wide adaptability, similar in this respect to the Othello.

The Canada is moderate in its bearing habit, that is to say, it produces about 25 to 30 hectoliters to the hectare, not that much every year, and it appears to deliver up this quantity with regret. It does better with long pruning but unhappily its lack of vigor does not permit it to be so treated for any great length of time; moreover it is subject to the weakness of dropping the fruit.

The buds come out early in the spring and the wood ripens early. The fruit also ripens early and makes a good wine. It was received very favorably in the Central and Eastern regions but the earliness of budding in the spring has apparently diminished the advantages attached to the earliness of its ripening because what it saves from the frosts of autumn it exposes to the frosts of spring. Thus in April, 1884, Bender writes to Pulliat that in vineyards where the Othello was not injured the Canada was often more so than the Gamays. The Canada freezes easily and this affects its fruitfulness. *****

183 Besides this, M. Viala has stated that in America it is very susceptible to cryptogamic maladies, the mildew and black rot and various other fungous disorders affect both the leaves and fruit and have induced so many growers to pull out their vines that there are very few left. It appears that this variety has no other merit than the quality of its wine.

The Canada is a grape with well equalized quantities of sugar and acid and also fortunately shows the excess of color which characterises the musts of most of the hybrids of rupestris.. After some years in the bottle the wine of this variety, which has some aroma, takes an onion peel tint and thus enables this wine to please both the palate and the eye of the little Burgundians.

Here are some analyses of the musts and of the wines taken both from the north and the Midi:-

MUSTS OF THE CANADA (Bouffard)					
Province	Time of Harvest	Density (Beaume)	Sugar (Glucose)	Bitart. Potass.	Acidity Sulph. Acid.
Montpellier	Aug 12'82	12.2	190		15.00
----	Sep 13'83	12.0	188	4.09	10.00

WINE OF THE CANADA

(M. Bouffard)

Province	YEAR	DENSITY	TOTAL ACIDITY		POTASS. BITART.	DRY MATTER		GLYCERINE VOLATILE	ASH		
			ALCOHOL	H ₂ SO ₄		100°	VACUUM		SOLUBLE	INSOLUBLE	TOTAL
Montpellier	1884	995.4	Deg. 10.3	3.7	2.84	28.2	31.0	11.1	1.56	0.69	2.25

WINE OF THE CANADA

(M. Perraud)

Province	Year	Alcohol	Acidity		Dry Matter
			Sulph.	Acid.	
Villefranche (Rhône)	1888	Deg. 8.1		6.2	21.2
-----	1890	7.1		6.7	21.6

The following year M. Perraud made some very interesting trials of some artificial yeasts for the musts of the Canada, not for the purpose of eliminating the foxy taste, for there is no foxy taste, but to see what yeast would ameliorate most the taste of the resulting wine. He prepared a vat of the Canada with a pure Bordeaux yeast and pure Burgundy yeast, pure Beaujolais and pure Ermitage yeast, and also one vat which was used for a check. At the time when all these wines were tested, which took place more than four months later, the check wine was found to be noticeably inferior to the others. The yeast *****

184 of the Burgundy gave the most perfect wine and the wine of the most marked bouquet. The yeast of the Ermitage seemed to impart its characteristic perfume but without ameliorating the other qualities of the wine. The yeasts of the Bordeaux and Beaujolais were inferior to the two already mentioned and were similar to that from the check vat. The general result of this interesting trial is given in the following table:-

WINE OF THE CANADA YEASTS

Source	Year	Yeasts	Deg. Alcohol	Acidity	Dry Matter	COLOR SALLERON UNITY
Viticultural Station of	1891	Bordeaux	7.15	8.1	23.8	0.75
Villefranche on the Saone (Rhône)		Burgundy 1	7.30	8.4	23.4	0.90
		Burgundy 2	6.85	6.5	21.4	0.67
		Beaujolais	7.	8.9	24.2	0.67
		Ermitage	7.1	6.7	21.6	0.60
		Check Vat	6.55	6.3	20.8	0.60

An examination of this analysis shows the favorable action of the yeasts of the vinifera upon the Canada and particularly the yeasts of the Burgundy. Perhaps this is the reason for the remarkable Canada wines which have been made in Burgundy into which were placed some hundreds of sacchromyces of Pinot(?) perhaps; in any case I close this series of analyses with that of a sample without an equal which has been sent me by M. Maldant, President of the Grape Growers Society of Beaune. In 1886 and 1890 M. Maldant, who was at the head of the movement for the substitution of American for French wines in Cote d'Or, was not afraid to plant a considerable area to Canada in his beautiful vineyard of Chenove-Ermitage, which were grafted on the Corton. The wine of 1889 which was kept for three years and then bottled is still smooth and sprightly. Here is a detailed analysis which I owe to the kindness of M. Mathieu, Director of the Burgundy Station at Beaune.

Density (15 Deg.)	995
Alambic(Distill.)	9.65 deg.
Fixed Acidity	3.80 gr.
Volatile Acidity	0.67
Dry Matter (100 deg).	24.40
Matter reduced	1.60
Cream Tartar	2.96
Ash	1.60
Sulphate Potassium	0.702
Alkalinity of Ash in Potass.	
Carbonate	1.126
Aldehyde	0.013

TASTE: Wine has a pronounced wild strawberry flavor which is well blended with the flavor of the wine and very agreeable. Has kept well and has a good bouquet.

DESCRIPTION.- Vine rather vigorous, of slightly upright appearance; two year old bark slightly adhering, later bark peeling in irregular strips; roots fleshy, branching.

Buds downy, of a yellowish white passing to clear green; the young leaves *****

185 for some time covered with yellow wooly hair, coming early out of the buds, slightly lobed and slightly grooved, both surfaces covered with a yellowish white down which is rather thick. The young clusters of flowers green and showing late. Canes short and slender, cylindrical, bushy and abundant, the herbaceous canes cobwebbed green, streaked with pink; shoots of late summer dull and smooth, of a clear brown color turning to hazel in the sun; internodes short, rather fine striations; nodes flattened, with bloom; tendrils regularly discontinuous, fine, long, glabrous, green and bifurcated.

Leaves medium sized, five lobed, orbicular, usually entire, but sometimes deeply incised particularly at the base of the shoots; parenchyma of average thickness to thin; the superior lateral sinuses rather deep, the inferior sinuses well marked, the sinus at the pet-

iole of the leaf crossing and forming a U; leaf blade glabrous, glossy and the upper surface showing green with a paler green on the under surface, also shows a light wooly down; teeth in two series, angular and very distinct; veins and small vines pinkish at the base and with patches of cottony hair. Petiole of average size, slightly wine colored, pubescent, cobwebby, and forming almost a right angle with the plane of the leaf; leaves fall rather early after turning a yellowish color.

Fruit usually two clusters on a shoot, sometimes one, and very rarely three, usually opposite the fourth and fifth leaf, small, cylindro-conic in shape, roundish at the extremities, resembling in this respect the Pinot; sometimes armed with a small thorn; peduncle rather short, green and enlarged at point of insertion; stem down amongst the grapes green; pedicels long, green, swelling at point of insertion, flattened and wart-like, pencil small and almost colorless, slightly adhering to the berry. Berries below medium to small, globular or very slightly elongated, rather crowded and rarely with small green abortive berries, of beautiful violet black color, slight bloom; umbilicus easily visible and often eccentric, rather firm, somewhat subject to rotting; skin more resistant than thick, flesh greenish, slightly soft, rather sweet, juicy, with a somewhat agreeable flavor which is always acid even when completely ripe; ripens in the first period; seeds one to two, rather small, reddish brown.

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SYNONYMS:- Hybride de Concord No. 6, Campbell's Seedling No. 6, Joslyn's Saint-Albans, Saint-Alban de Joslyn.

HISTORY & GEOGRAPHICAL AREA.- The Triumph is a hybrid of the Concord and of the Chasselas Musque which was artificially hybridized by an American viticulturist, George Campbell of Delaware (Ohio). Campbell was simply an amateur experimentalist, somewhat of a savant rather than a commercial grape grower. The climate where he lived was not very favorable for grape growing and Campbell never had the satisfaction of being able to propagate his Seedling #6 at his home. The cold winters, late frosts in the spring, and early frosts in the autumn prevented his propagating his favorite variety. He deputized this task first to Samuel Miller, also to Bush & Meissner in Missouri, then P. J. Berckmans in Georgia, and finally to T. V. Munson in Texas. All of these people were much impressed with the beauty of this variety and did not hesitate to praise the heavy golden clusters which in 1880, at the St Louis Exposition, took the first prize as a table grape, and even today Mr Munson states that the Triumph is cultivated on a large scale in the Southern States, where it furnishes one of the finest dessert fruits in America.

It is indeed a most magnificent golden grape, not sufficiently foxy so that the French amateurs object to it. For some time it has been very popular on this continent. M. Lespiault in Gironde and M. Reich in Provence were much struck with this variety. M. the Count de Lestrang writes in January, 1883: The Triumph is without equal for the Charente. Its wine is very alcoholic, very pleasant to taste and similar to the Folle Blanche. As to its production this year on M. Reich's place it has only been equalled by the Aramon," and on the 27th of May of the same year M. Piola adds "As to the Triumph, I believe it is destined to replace in our vineyards of l'Entre-deux-Mers the Folle Blanche, or ix Enrageat, which have been completely destroyed by the Phylloxera, and that it will play

the same role that the Othello has played with our Palus. To justify his words he sent M. Pulliat a sample of his Triumph wine of 1882. This wine, the same that was exhibited later at Lyons by M. Gaillard in 1885, was found to be rather good without bad points and without good ones. At the Pomological Congress of 1887 M. Silvestre gave Champin the receipt for making the Triumph wine which satisfied him so well. This receipt was very simple and consisted only in separating the must from the husks before fermentation. But at this time the popularity of the Triumph is past. The foremost experimenters, reasoning more clearly than formerly, recognized that it has seen its day. M. Lespiault, one of the first critics, did not hesitate to speak against this variety, which he recognized to be inferior. He courageously declared that the Triumph was very slightly resistant to the phylloxera and classed it lower than the Elvira and the Noah. In 1886 M. Froisdefond, Vice President of the Agricultural Society of Gironde, stated that the Triumph had during the first year after it was planted in his vineyard, fruited so abundantly and showed such beautiful golden fruit, both for home use and for exhibiting purposes, failed after about the fourth year, and that the foliage had since then been diseased and the fruit disappeared. These criticisms and others of a similar nature caused for some time considerable controversy as to the health and vigor of this American variety. Finally Messrs Viala and Ravaz by their work cleared up this obscure question by fixing the real degree of phylloxera possessed by this variety. This resistance is very slight and the Triumph today is relegated from commercial vineyards to collections of amateurs and even there it is difficult to maintain. One can say at least for France that this boasted hybrid hardly justifies its name.

We have seen that the Campbell #6 is a cross of Concord, a variety of the *labrusca*, by the *vinifera*, the Chasselas Musque. This variety was known for some time in America by the name of St Albans at least it was under this name that Count de Rovasenda received it. We suppose that it was due to its cultural extension completed by the name of a place, Joslyn. Other synonyms are Joslyn's St Albans and St Alban of Joslyn.

The Triumph has been taken in its turn for a parent for hybridizing in the southern portion of the United States where it has had a real triumph. There are many progeny of the Triumph produced by Mr Munson. These seedlings are little known in France but are highly esteemed in the New World. The principal ones are Bailey, Big Extra, Big Hope, Carman, Rommel and Campbell.

CULTURE & VINIFICATION. At the time of its greatest popularity, the Triumph was considered a productive and vigorous variety, and indeed it would be so if it were not for the phylloxera and fungous disorders. It roots readily from cuttings and is quite adaptable to different situations thanks to the strong effusion of *vinifera* blood. It does better in calcareous soils than the *riparia*, the *rupesstris* or the pure *labrusca*. It has been seen to grow in the chalky

soils of Charente. This explains to a degree at least its popularity for a time in that region which was so hard put for grape varieties before the Berlandieri hybrids became common, but its feeble resistance to the phylloxera - 4 by Viala and Ravaz scale - soon limited its extension. In the deep soils of its native country it grows admirably, as may be believed from what its originator wrote in 1882 "I originated the Triumph many years ago and I have still the original vine in my garden. It shows itself perfectly resistant to the phylloxera." In our shallow soils it is very quickly destroyed by this insect; it suffers also from the effect of the sun and the humidity. It seems to do better in the alluvial and clayey soils than in those of lighter nature. It requires training on a trellis with medium length pruning. The pith is rather sensitive to the freezing of the wood in winter. It starts to grow too early in the spring and there is some danger from spring frosts. In Bender's collection in Beaujolais it seems to affect the graft similarly and varieties grafted on it have been injured when those on the Noah and Othello alongside were held back sufficiently to escape injury. One other bad characteristic is its late maturity. "Very vigorous, very productive," says Viscount de St Paul, in reply to an inquiry made by a French vineyardist in 1891, "but now almost wholly abandoned because the fruit will not ripen." In the Midi it was received with many hopes, which have not been realized. I append a table of its vegetating periods.

PERIODS OF VEGETATION

<u>Variety</u>	<u>Buds Burst</u>	<u>Flowering</u>	<u>Maturity</u>
Triumph	Mar. 20 to Apr. 9	June 4 to June 16	Aug 30-Sept 11

Its abundant foliage, which at first was considered very healthy is frequently attacked by the mildew, and indeed on certain years more so than the vinifera, and it is also subject to a sort of burning of the leaves which Viala has called resorption. It was on this variety which the professor observed this curious disorder for the first time in France. He says "The alterations ~~which~~ show as spots ~~on the~~ parenchyma of a citron yellow color, very transparent and with streaks of a lighter color. These streaks ramify among the yellowish veins, rarely swelling the tissue, more often, on the contrary, the tissue is depressed; it is entirely in this tissue that the disorder shows; the tissue appears to be reabsorbed. These depressions in the parenchyma only show in the leaf; they are irregular in shape. The leaf itself is deformed as is the vein side of the leaf. The leaves often draw up. It is to be understood that this disorder is wholly separate from any symptoms coming from phylloxera. The Triumph, which escapes the black rot in America, according to Bush & Meissner, is far from being indifferent to the

black and brown rot in France. It is necessary to use great care to save the crop. For this and for other reasons it is rarely found in vineyards today. *****

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To continue, this is without doubt a beautiful dessert grape, both beautiful and of fine flavor in spite of its labrusca odor, but its susceptibility to the phylloxera prevents its being used as a direct producer and its susceptibility to fungous disorders prevents its being grafted on more satisfactory stock. Trials of this variety for the making of wine in France have not been satisfactory. The taste committee selected by the Agricultural Society of Gironde, gave the Triumph of M. Piola only 11 when they gave samples of the Noah from the same proprietor 16 and 17. Its must, after being fermented, gives nothing better than an insipid foxy wine, slightly tinted, not highly colored, and not clear. Even the partisans of this variety recognize that this wine is not of high quality. M. Girerd says: "Generally slightly alcoholic;" and Mme. Ponsot adds: "Rather flat and watery." In spite of the high esteem in which this wine has been held by Piola and Champin, it does not seem even to equal the wine of the common Chasselas. Here is the composition.

MUST OF THE TRIUMPH
(Bouffard)

Province	Year	Density (15deg) (Baume)	Sugar Glucose	Acidity Sul. Acid.	Bitart. Potass.
Montpellier	1883	9.50	173	5.70	3.14
----	1888	9.00	148	5.75	"

WINES OF THE TRIUMPH

Province			Deg									
Montpellier	1883	993.3	9.5	5.10	2.50	17.2	22.4	8.4	1.20	.40	1.60	
----	1888	"	8.6	5.21	"	14.8	"	"	"	"	"	"

This analysis shows by the low quantity of dry matter, particularly ~~by the low quantity of dry matter~~ in the second sample one of the probably true causes of the inferiority of this wine, a wine which seems to be watered naturally.

DESCRIPTION:- Vine rather vigorous, of open habit; trunk of good size, bark cadacious and irregularly elevated; roots thick and fleshy.

Buds large and swelled, covered with a light down reddish and copper colored; buds appear at medium or rather early date; young leaves downy and bronzed, patches of pink over their surface, the lower surface with a silvery tomentum and with patches of hair on the veins, glossy and yellowish on the upper surface and with some cobwebby patches; three lobed, small; teeth mucronate and red, rather slow to open completely and become the young clusters of flowers are a clear green and entwined with a little thick down.

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Canes long, rather slender, reddish green in color when in the herbaceous state and of a deep dull green in the late summer time; internodes long, striations broad but not deep; diaphragm at the nodes marked; tendrils regularly discontinuous as in the vinifera, bifurcated and trifurcated, but very commonly trifurcated; leaves medium to large, slightly orbicular, undulating, three lobed, the lateral superior sinus very shallow or lacking; inferior sinus totally absent; petiolar sinus almost forming a V; Leaf of a deep green, glabrous on its upper surface and covered with a compact whitish wooly down on the lower surface; Teeth in two series, short, pointed and slightly mucronate; veins rather prominent, pinkish at the point of division; Petiole long, carmine in color and forming ~~an~~ almost a right angle with the plane of the leaf. Leaves fall medium early and are of a yellowish color at that time.

Fruit cluster usually two to the cane, coming opposite the fourth and fifth leaves, large, rather crowded and long cylindro-conic, slightly shouldered on both sides; peduncle long and strong greenish, firm even when not lignified by maturity. Stem amongst the fruit grayish green, pedicels short, of average size, covered with small warts and terminated by a flattened swelling at the point of insertion; pencil colorless and very adherent to the berry pulling off some of the skin when it is removed. Berries large, round, and owing to compression sub-globular, elongated, very irregular in size on the bunch some being large, some medium, and some below medium; do not all ripen up evenly, of a green color in the sun, becoming almost a golden yellow at maturity which is at the third period; very slight bloom; umbilicus slightly apparent; skin thin, slightly elastic, translucent, inclined to break; flesh juicy sometimes a little pulpy; juice abundant, sweet, foxy of a grayish color. Seeds from one to two, rather small considering the size of the berry.

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ELVIRA

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SYNONYMS.- Rommel's No. 1, Taylor's Seedling No. 1.

HISTORY & GEOGRAPHICAL AREA.- The Elvira is the result of a seed of the Taylor planted in 1863 by Jacob Rommel of Morrison,(Missouri). It was in 1869 that this elder brother of the Noah, which is like it a seedling of the Taylor, fruited for the first time. It was introduced in cultivation in 1874 by Bush & Meissner who were very favorably impressed by it on account of its having withstood the remarkable winter of 1873 without protection. They gave a description of this variety with a color plate in their work of 1876 and from this time dates the popularity of the Elvira. This variety is a heavy bearer of small grapes which are comparatively healthy, at least so in years not very favorable to the development of the various rots. It was carried to the pinnacle of its first popularity by the first planters; indeed, it was not only with favor and good will that it was received but with a delirious enthusiasm. Meissner states, to indicate the infatuation when this variety was introduced that no new variety ever spread with such rapidity. And the celebrated professor of Missouri, George Husmann, wrote a perfect panegyric of the Elvira in which he complacently enumerates seven reasons why one should plant this variety. Its early ripening period and its hardiness recommended it for the north and it soon spread over the numerous islands along the shore of Lake Erie. It was cultivated only for the making of wine for the berry is too small and too much inclined to burst when shipped to recommend it to the market. The

Elvira has had and still has a wide popularity in America, nevertheless Mr Munson writes us that the cultivated area of this variety is becoming restricted, for little by little it is giving place to the Rommel which is a cross of the Elvira X Triumph, and which is superior to the Elvira in every respect.

192 In France the Elvira was stimulated by the recommendations of the Americans and it was tried to a limited extent at a period when they were just beginning to reconstruct French vineyards and when, owing to the general ignorance of the new condition, its faults were not readily detected. Like the Clinton and the Taylor it was used at first as a stock. Campbell having recommended it for this purpose in America, Champin and Pulliat here also, up to 1880, advised that it be used for this purpose in Beaujolais and Isere. It is only fair to add, however, that eight years later, after having seen trials of this variety, Pulliat condemned it without measure, not only as a stock but as a direct producer. Between these times the Char-entes had experimented with it; its wine did not appear to be disagreeable. And its adaptation to calcareous soils combined with its resistance to the phylloxera was the means of its being tested in Cognac and Armagnac country, a fact we deplore today for it was an irreparable injury in that it induced the growers to abandon the Folle Blanche and other unequalled wine varieties which had made the reputation and fortune of these districts. At the same time that Pulliat and the Burgundy vineyardists threw the Elvira overboard Messrs Cazeaux-Cazalet, Daubel, Froidefond and still others in the Gironde were telling their fellow growers of its lack of value and doing what they could to prevent the fact of its general adoption. Thus in 1891 in the "Enquete des agriculteurs de France" amongst the answers to the different questions, you will find it stated that the Elvira is a variety without any future which has been condemned and abandoned shortly after its introduction. Today this seedling of the Taylor survives but not commercially. It may be found in the collections of schools and of certain amateurs whose enthusiasm for American varieties induces them to gather all sorts that they may judge which is the best.

COMPARATIVE AMPELOGRAPHY:- The Elvira is a labrusca X riparia like its younger brother the Noah and like this variety also it shows chiefly the peculiarities and the characters of the Taylor and a general appearance that is more labrusca than riparia. Its thick, entire leaves with obtuse teeth, which are not pointed, are rather susceptible to the mildew; the small yellowish clusters which are found in the Noah, are reproduced in the Elvira also with the exception that the foliage is strong and healthy, the lobes are pointed and the clusters green. The continuity of the tendrils which means also the continuity of the clusters, which are habitually four or five and sometimes seven or eight, confirms the hypothesis of Millardet, who was always inclined to see in the Taylor a variety in which the general appearance of riparia had been affected by the infusion of labrusca blood.

193 Seedlings of the Elvira, however, which were raised at the school at Montpellier in 1877 seem to indicate the existence of a third factor in the origin of this variety. These seedlings show two types which are absolutely distinct and which are repeated without a limit to the exclusion of all others. The one is of a riparia appearance with glabrous leaves more or less lobed like the Taylor family; the others resemble a very singular variety which is raised in the Garden d'acclimatation of Paris under the name "Grand Noir" but which has nothing in common with the vinifera variety of this name. This unknown sort which Planchon could not classify shows a very peculiar moon flower appearance. It was on this account named by Messrs Foex and Viala by the symbolic name "Sphinx" because of the puzzle which it seemed to present to ampelographers. The form is truly paradoxical and does not resemble the true vitis. The leaves in place of being lobed and dentate after the ordinary fashion, show a succession of large sinuses which resemble certain of the moon flowers. By the persistence with which this form appears in the seedlings of the Elvira one has the right to suppose that this variety played some part in the production of Elvira, a part which was unknown to Rommel, and it quite probably furnished the pollen for a natural hybridization of the Taylor. This supposition is confirmed by the fact that it is so different from the Taylor which has thin serrate leaves. The Elvira may be distinguished from its male parent, the Sphinx, by the following characters:- open appearance, long canes, long internodes, more slender canes, with almost constant diameter (that is, not tapering), sinuous nodes, enlarged canes numerous and of a deep brown color in the early part of the season, glabrous, with hairs only at the extremities, the grooves on the internodes rather distinct and extending almost to the nodes, tendrils crooked, bifurcated, rather long, lightly washed in brown, continuous on some canes, leaves small, entire, rhomboidal with a single series of teeth which are large and obtuse; surface honeycombed and of a deep green, glabrous above, covered by a felt-like whitish down below.

Besides these seedlings of the Elvira which are only of scientific interest there are a large number of others of practical interest and which are considered to be of value, at least on the other side of the water. Herman Jaeger of Neosho raised many of these seedlings in 1880 from seeds which were given to him by Jacob Rommel. One of these was the Elvira #100. This variety looks more like the labrusca than the Elvira, is larger than the Concord and more compact; it shows the character of continuity of the tendrils and this, combined with the size of the cluster, insures productiveness. In hardiness, foliage, vigor of the roots and aroma of the fruit it is in no way superior to the labrusca type. Its culture has never been extended in France. Besides this Rommel has raised many seedlings of his Elvira. The most celebrated of these in America is the Elvira #3, called also the Etta. It took the prize for productiveness in the Horticultural Society of St Louis in 1880. Bush & Meissner say

"We consider that this is the best of Rommel's white grapes and a great improvement on the Elvira." This opinion, however, is contradicted even by the most indulgent American grape growers. "The improvement" says Champin, "if any improvement at all, is very slight." Large, vigorous, beautiful but small fruit, in this respect it is just like the Elvira. The cluster of the Etta is peculiar in that it is doubled by a shoulder or wing on one side which is frequently as large as the cluster itself. The Etta has never been cultivated in France any more than the Elvira #100. In Texas in 1885 Munson hybridized Elvira with Triumph and raised a series of white varieties. The best of these he named in affectionate honor of Rommel. Another combination of Elvira with Champion gave the Presley, a beautiful black grape. The Rommel has appeared to be worthy of culture to some of the French vineyardists, notably M. Chevallier in Le Gars, as a new element for breeding. The results of his crosses are yet unknown. Among the scarce hybrids of the Elvira originated in France it is necessary to add the 5510 of M. Castel which is Elvira X Herbe-
mont d'Aurelle.

CULTURE.- The Elvira grows vigorously in almost all soils ~~whishx
xxxxadaptedxxxxxxxlabruscaxxxxthatxxxxinxxxxnewxxxxdeepxxxxsandyxxxxsax~~ except where the subsoil is too calcareous or too wet, and in marly soils. It roots readily and its growth is rapid. In soils which are adapted to the labrusca, that is, in new, deep, sandy soils with but few phylloxera, it is so vigorous that it is apt to deceive one into thinking that it would make a good stock. "I have observed *****
194 it for twelve years" says M. Girerd, "in the midst of phylloxera and on soils of medium quality and I am more and more impressed with the great productiveness which it gives to those varieties with which it is grafted and this in spite of the numerous nodules which one finds on the roots. This is also true of the Taylor. This fertility, which it seems to me comes from the Elvira is due to the remarkable power which it possesses of sending out small roots, and in cultivating the Elvira on the Taylor the number of hair roots is very striking. Cuttings which have been grafted on these sorts when planted with others may be easily distinguished some distance away by the greater vigor of the grafts." Who is there that uses the Elvira today as a stock? It was from America that the recommendation came and in France its partisans were very numerous. Meissner stated that it is more resistant to the phylloxera than the Taylor. Daurel likewise. Pulliat himself, even in 1888 gave it upon the authority of his correspondence as one of the best varieties, and a variety which would prove itself for six or seven years in the midst of a very phylloxera ridden vineyard. But this was not on his part a question of suspicions or hopes; he was always the first to perceive the true state of affairs. The slight resistance of the Elvira which has been placed at 8 by Viala and the horror which this plant had for the calcareous soils arrested very quickly this variety; its weak points were mentioned on all sides by everyone. M. Sylvestre of Beaujolais, M. Froidefond of Gironde made some experiments with Elvira grafts. The trial was made in the field of the Condamine in order to make clear to the public the exact value of the Elvira as a stock compared with the Taylor its mother. Since then Viala shows that this variety has mod-

erate resistance to the phylloxera and that it is of the rupestris type of resistance. Here is his resume of these experiences:-

FIELD OF THE CONDAMINE.				
Grafts	Rupestris Resistance: 19	Viala R: 12	Taylor R: 11	Elvira R: 8
Aramon	19	13	20	8
Carignane	20	16	20	9
Cinsaut	19	12	18	7
Alicante-Bouschet	20	16	20	9
Petit-Bouschet	20	15	19	11
Clairette	20	14	18	10
Folle-Blanche	19	18	20	15
Pinot	14	17	16	5
Poulsard	15	15	13	3
Cabernet franc	20	20	18	11
Cabernet-Sauvignon	20	13	20	7
Gamay	16	14	14	5
Mourvedre	16	16	16	2
Syrah	18	16	20	11
Grenache	20	16	19	12
Bobal	20	15	20	8
Terret-Bouschet	20	14	16	12

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From this table it may be seen that the Elvira is adapted to but few varieties as grafts and that it does not maintain the vigor of any of them also in spite of opinions to the contrary by a few grape growers who excited themselves in recommending this variety, the other opinion extended, and Pulliat in 1888 believed it proper to end his description of this variety in his "Mille varietes de vignes" with the following sentence:- "This variety is today abandoned both as a stock and as a direct producer."

Indeed, as a direct producer the career of the Elvira in France has been neither longer nor more brilliant than as that of a stock. This variety was brought from America with a reputation for health both in foliage and in fruit which its conduct on this side of the water has never justified; it mildewed to such an extent that in 1883 the committee of Alais spoke of the disappointment that the growers had expressed on this account. The black rot does not attack this variety in America, at least not in ordinary seasons, and it attacks it badly with us. In the Southwest the Elvira suffers from the rots and the mildews; in the Midi the berries burst and fall from the vine before ripening; in the North the spring frosts affect it as badly as they do the common vinifera. Here are the periods of vegetation at Montpellier

PERIODS OF VEGETATION OF THE ELVIRA

Buds Burst	Flowering Time	Maturity
March 23 to April 9	May 8 to May 23	August 15

And, finally, the phylloxera, which is its principal enemy, makes existence for it both in the North and the South a constant war and seriously affects its productiveness in most all soils after a few years of good growth the variety fails, the few clusters of fruit fail to mature; the leaves rot and fall before their proper time.

The foxy flavor of the fruit has contributed much to the discouragement of the partisans of this variety who possibly, if it had not been for this unfortunate aroma in the fruit and in the wine might have taken better care of their vines and thus have prolonged their existence. The American grape growers themselves, whose palates are not very fastidious, recognized that this variety is but scarcely removed from the wild state. After having stated that this variety is without foxiness (none that he could taste), Campbell says it has an immature flavor which he also says characterizes the taylor. In spite of the susceptibility to late spring frosts it is a very productive sort owing to the dormant buds which come on to fruit after the others are injured. The clusters are small and the berries only medium but they are crowded together and very numerous. The grapes that are gathered from this variety from vines that are in full vigor are very good particularly if they are pruned long. Instances are cited of 150 to 200 hectoliters being secured from the hectar. It ripens during the first period. The fruit is of a greenish color in America and an almost pinkish yellow in France. They are difficult to harvest and the gathering cannot be expedited on account of the tenderness of the skin which frequently bursts even when there is no rain and on the drier soils.

VINIFICATION.- Bush & Meissner say that "the Elvira makes an excellent white wine." It would be interesting to know if the Elvira really makes a good wine in America or whether, as I am inclined to believe, the Americans find the wine of the Elvira good. Herman Jaeger adds "The Elvira is without a rival for the production of hock," (a Rhine wine). This pretension of supplanting the Riesling with its delicate and slightly musky aroma and that the grape from any prairie, even those of Alsace, would be superior to those raised on the edges of the virgin forests of Johannesburg, makes one laugh. Nevertheless Pulliat takes these assertions seriously and discusses them as follows: "I have never tasted wine made from the Elvira," says he in 1880; "however, the flavor of the Elvira, while it is pleasant, nevertheless shows a little characteristic labrusca flavor and resembles absolutely in no particular the Riesling which produces the celebrated wines of the Rhine. I believe, as do many others who have cultivated the Elvira, that this variety can be made to produce a good ordinary, rather agreeable wine, but I am far from believing that it will

ever attain the quality of the Johannesburg, - no, nor even be as good as that which comes from the left fork of the Rhine, which is much lower in quality." The oenological chauvinism of the wine makers of the United States misleads them. To make Johannesburg out of the Elvira is equal to saying that one could make Chateau-Yquem with the Noah, or to ~~assert that the~~ ~~Sauvignon~~ insinuate that the Sauvignon is foxy and the Noah musky. The Americans are convinced of the excellence of their own crudeness. "The Carolinas," says Ruysen "are proud of the Souppernong, which is fresh and tender but slightly debilitating; of its pinkish white Herbemont, of which the flavor slightly resembles the Spanish Manzanilla, only it is a fresher, fuller flavor; of its Taylor, which it compares with the Riesling of the Rhine; of its Cunningham; of its Devereaux, which they compare with the Madeira, but the comparison is distant, very distant. "I believe," says Pulliat, "that, in spite of the pretensions of the Americans, if the Elvira or even its ancestor, the Taylor, could be compared with the Riesling, would be found to be very much poorer."

The best method of adapting the Elvira wine to France would be to send the wine to America and in traveling around and touching the sacred soil of its native land it would become excellent. Even Champin himself, who thought that the use of American vines as direct producers of our grapes for cooking and dessert, did not dare to defend the wine of the Elvira "which has a taste suggestive of a strawberry or a raspberry." The Viscount de Saint Paul, the compiler of the Enquete des agriculteurs de France, says that the unanimous opinions of his informants were in regard to this variety: "wine bad, very foxy, but the foxy taste is slightly lessened by age."

In his Essai d'un ampelographie universelle the Count de Rovasenda says a word in regard to the wine of the Elvira that I must confess I do not well understand. He says: "Wine capable of being used in France." For what? It would seem to me that the people who raise the Vermouth di Torino and the Muscato, the Asti and other varieties might use the Elvira with infinitely greater benefit than those who raise the Chablis or Meursault. There is no sense in such directions and they are a great mistake, for while the Noah may have its foxy taste removed though with difficulty and thus be made useful in France, that of the Elvira has such a raspberry taste that it resists practically all efforts to make it drinkable. "The white American wines says M. Bouffard " are far from being a satisfactory substitute for our native white wines; in general it must be said that they leave much to be desired both as to quality and quantity. The wine of the Elvira is foxy and it lacks freshness and is subject to the graisse (greasiness). The average crop of this variety is 25 hectoliters to the hectare." Except for the statement in regard to the crop the judgment of M. Bouffard is perfect. His estimate of the crop was made from vines of this variety growing at the school of Montpellier. Here are the analyses of the Elvira must and the Elvira wine according to M. Bouffard.

MUST OF THE ELVIRA

(Bouffard)

Province	Date Harvest	Density at 15 deg(Baume)	Sugar glucose	Potass Bitart	Acidity Tar. Acid
Montpellier	Aug 21, 1882	9.0	128	"	9.90
-----	Sept 6, 1883	10.2	160	3.10	6.40

WINE OF THE ELVIRA

(Bouffard)

Province			Deg.									
Montpellier	1883	993.2	9.2	3.03	2.36	17.8	20.8	8.0	1.55	0.33	1.88	
-----	1884	992.3	9.5	3.12	2.32	19.6	20.4	9.0	1.75	0.21	1.96	

WINE OF THE ELVIRA

(Perraud)

Province	Year	Alcohol	Acidity	Sul. Acid	Dry Matter
Villefranche (Rhône)	1888	6.85		6.1	19.4
-----	1890	6.75		6.6	22

As the Elvira ripens early it succeeds well in northern vineyards but the wine of the Elvira from such vineyards does not show a high alcoholic content, as is shown by the following analysis:-

Note (Here should be read the preceding table

"Wine of the Elvira (Perraud).

Placed above by mistake).

The Elvira makes a light wine less alcoholic and more foxy than the Noah. This foxiness is lessened by racking off but it never wholly disappears. The variety is fruitful in good soils but inferior to the Noah in this respect. M. Perraud has also tried using artificial

ferments for the Elvira and succeeded in reducing the foxiness slightly by the same methods which almost eliminated the foxiness from the wines of the Othello and the Noah. The yeast chosen for this purpose was from the Sauterne and here are the results of his experiment.

Nature of Fermentation	Alcohol	Acidity	Dry Matter
Natural Elvira(check)	6.5	6.6	20
----- Sauterne yeast	6.85	6.7	21

As will be seen from this table, the pure yeast of the Sauterne gave a slight gain in alcohol and in dry matter over that of the wine which was used as a check. Tasting showed that the foxiness in the check wine was much stronger than that in the wine in which the Sauterne yeast was used. *****

but the influence of the yeast is much less apparent with this variety than with the Noah, for with the Noah the alcoholic comparison was as seven degrees to eight degrees and the dry matter comparison as 20 grams to 22 grams, and tasting showed that the foxiness was very much ameliorated; thus one must say that the Elvira does not appear to be well adapted to improvement by the use of artificial yeasts.

The distillation of the Elvira wine makes a rather delicate brandy which is more neutral than that of the Noah. At the famous meeting for sampling liquors which was held by the Bordeaux Agricultural Society on the 29th of November, 1883, this brandy was highly recommended so that while the wine of the Elvira was graded as being 9, the Elvira brandy which was exhibited by M. Lespiault and made in the Armagnac vineyards, was graded at 20; however, the market has since that time changed its opinion and the Folle Blanche product is recognized as being superior.

DESCRIPTION.- Vine vigorous, slightly spreading but not erect, trunk strong, bark coarse and soon peeling off, roots fleshy, very spreading, shallow,

Buds covered with light green down with pink edges, falling rather early, very small, frequently double, of a dirty red, turning to a whitish wine color on the periphery of the leaves. Young leaves which show medium early, entire, thick, cottony, of a light green color, covered with a cadacious tomentum on the upper surface and with a persistent tomentum below, veins covered with reddish down, teeth mucronate and of greenish yellow. Clusters of young flowers spotted with dirty brown, showing at the time of flowering a slightly swelled ovary surmounted by a long style and terminated by a very small stigma.

CANES.- Long, large, nodes prominent, side canes rare but well developed, in the herbaceous state cobwebby, and of a light green washed with brown and with some small stiff hairs, in the latter part of sum-

mer of a buff color shading into a much deeper color at the nodes; shoots ~~strong~~^{solid} and not requiring tying to keep the wind from breaking them. Internodes of medium length, ~~very~~^{rather} short at the base of the canes, striations fine and regular, pith not so thick as in the Taylor and the wood is harder. Nodes always prominent and flattened, tendrils usually continuous, trifurcated, long and strong.

LEAVES large, entire, thick, slightly folded, superior sinus showing only as a depression at the side of the acuminate terminal lobe. i. Inferior sinus lacking, basal sinus narrow or even closed, leaf blade blistered and swelled out between the veins, of a deep green color and somewhat glossy on the upper surface which is almost glabrous. Under surface glaucous and lightly ~~covered~~^{slightly deep} with patches of whitish hairs, teeth angular, very large, ~~sharp~~^{slightly deep}, occurring in two shortly mucronate series, veins slightly pink above, quite prominent below and covered with erect hairs. - Petiole slightly long, strong, with brownish striations, covered with short, stiff hairs and usually forming an obtuse angle with the plane of the leaf.

FRUIT. Clusters from three to five inserted consecutively, below medium to small, about twelve centimeters in length, roundish, shortly cylindrical, sometimes spherical or cylindri-spherical, crowded, very compact, rarely winged. Peduncle strong and long without being slender, greenish and wooly, stem down among the berries green, pedicels ~~short~~^{rather} and of medium size, without warts, swelling at point of insertion slightly prominent, pencil of clear yellow color, only * * * * *
P. 199. slightly adhering to the berry. - Berry ^{below} medium to small, from ten to twelve millimeters in diameter, often there are two different sized berries on the ~~stem~~^{same} cluster, but none of the green grapes are abortive, crowded, globular or slightly elongated, light green with white bloom, sometimes showing red striations when dead ripe. The general effect is pink, (an effect which is much more common in France than in America) eccentric umbilicus, marked by the persistent stigma; rather thick stiff leathery skin which ~~exposes~~^{inclines} it to cracking, green on the inside, and of a greenish white on the outside which passes for golden yellow, or sometimes at large expositions for a beautiful pink. At the time of ripening which is at the first period, flesh is slightly pulpy, not juicy, juice colorless, sweet, of a raspberry flavor or slightly foxy, rather pleasant, seeds from 1 to 3 per berry, usually 2, medium short.

J. ROY-CHEVRIER.

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SYNONYMS.- Hybride d'Arnold No. 5, Arnold's 5.

REMARKS.- The Autuchon is a hybrid of Labrusca-Riparia X Vinifera by the same originator and of the same series, or at least of the same class, as Othello and Canada. In this new combination Arnold has taken Clinton for the mother and Golden Chasselas, (Chasselas dore) as the father. In 1869, Samuel Miller, the originator of the Martha, a direct hybrid which was at one time quite famous, spoke very highly of the Autuchon. According to him this variety was the best native white grape in America and a veritable treasure. But in spite of the quality of its fruit which was of an excellence altogether too rare, the Autuchon did not fulfill its promises and on account of lack of productiveness and extreme susceptibility to fungous diseases, mildews and various rots, it rapidly disappeared from those parts of the United States where it was timidly tried and did not even extend its culture in Canada, its native country. Munson has recently confirmed the statement that M. Viala and myself have made, that in its native country this variety is known but only cultivated to a very slight extent. In France this variety can hardly be found even in grape collections. Aime Champin has made a peculiar mistake in regard to this variety. It is known Autuchon is a light pink and that it is never black. And yet the chatelain de Salettes, which is usually so trustworthy a document, describes the Autuchon as follows: "Autuchon, good foliage, bright green, deeply lobed, good berry, long, black, very good." It may be said in passing that this merely proves that the Autuchon was but little known in the center of France.

Its resistance to phylloxera is slightly superior to that of the Othello, being seven in place of six, and its adaptation to calcium soils was the reason of its being planted for trial in certain poor soils which would have been ill adapted to even the most vigorous American vines. In the chalk soils of Charentes for example, I well remember seeing this variety used as a stock. The vines looked green and healthy but did not long survive. This variety is slightly lacking in vigor. It has long, somewhat slender, canes and fleshy roots; and in general appearance shows the vinifera more than the labrusca. It roots * * * * *

p. 201 well from cuttings and accomodates itself readily to marly soils and to those that are thin and calcareous and thrives there to the extent that the phylloxera will allow. The vegetation periods at Montpellier are as follows: buds burst from 2 to 10 of April, in flower from ¹⁵ to 25 of May, ripens from 24 to 30 of August. Its vegetation cycle is short, it being similar in this respect to the

Chasselas from which it came. It is slightly subject to the Oidium and to the Botrytis cinerea. The fruit at times is subject to black rot and the foliage is often affected by mildew. The cluster is long, thin, ~~and a great favorite with wine growers~~ and readily recognized by the color. It has a rather large, straight stock upon which one finds medium sized berries. The berries are of a pinkish yellow and have the flavor of a muscat which is not at its best, and not disagreeable. The Autuchon has rarely been used in France for hybridizing but has been used to a limited extent. The Malegue No. 166 - 1 is a case in point; the parentage is Gamay-Coudere X Autuchon.

The wine has been found to be very good at Montpellier. At Bordeaux where M. Peolla sampled specimens sent in in 1883 which had been made in the Palus, the impression on the jury of judges was less favorable than that given at Montpellier and this wine was only graded as 10 while Noah along side was graded 16 and 17. To come back to the school of Montpellier which has saved in its cellars wine of this variety at least a dozen years old, they described this variety as follows: "Wine remarkably white, vinous and fresh, slightly musky and agreeable, of a beautiful yellowish color and which increases with age." According to M. Bouffard the composition of the must and wine of the Autuchon at the School of Agriculture in Montpellier is as follows:

MUST OF AUTUCHON

Analysis by M. Bouffard.

Source	Year	Density at 15°C.	Sugar	Corresponding alcohol	Total acid in H ₂ SO ₄
Montpellier	1888	1088	204	12°	6.8
-	1900	1083	191	11.2	7.76
-	1901	1094.5	221.5	12.95	5.6

WINE OF AUTUCHON

Analysis by M. Bouffard

Source	Year	Density at 15°C.	Alcohol (Ebulliometre Salleron)	Dry Matter (Houdart)	Total acid in H ₂ SO ₄
Montpellier	1888	"	12°65	24.50	6.35
-	1900	994.4	9.8	17.20	5.97
-	1901	992.3	12.6	20.10	4.77

If the bulletin on tasting which precedes this analysis is exact, it is certain that the good opinions of its experimenters are justified. ~~and the~~ Autuchon "could ~~hardly~~ be placed on the market as a high class wine." But the many bad points of the variety overcome the good ones. And the planters must also agree with one of the sampling committee who said "as a whole this variety cannot be used for commercial purposes and there is no room for it elsewhere."

P.202 DESCRIPTION.- Vine quite vigorous, of open appearance, trunk strong, bark separating in irregular strips, roots coarse and soft.

Buds downy, of a pale yellowish green, bordered with a clear pink; young leaves cobwebby, of a brilliant light green, distinctly three-lobed and sometimes five-lobed, teeth distinctly marked and wine colored at points, both sides of the leaf covered with a light white down which soon falls off from the upper surface; young clusters of flowers large, of a greenish color showing carmine at summit, appearing under a network of whitish cobwebby hairs at the time when the shoot first shows which is late.

Canes long, somewhat slender, sinuous, branching, glabrous, streaks and grooves of violet, almost black when in the herbaceous state, changing to a yellow brown in the latter part of summer, very deep purple showing at the nodes; internodes of medium length, smooth and cylindrical; nodes prominent, large and flattened; tendrils regularly intermittent, long, bifurcated and wine colored at the base.

Leaves medium size, five lobed and deeply lobed; the lateral sinuses both superior and inferior, hollowed out in form of a lyre; the basal sinus very open in the form of a U; blade of the leaf deep green, smooth and glossy on upper surface, lighter on under surface, glabrous above ^{and pubescent below} with a pink tint at the division points.- Petiole large and long, glabrous, slightly washed in purple, making a right angle with the plane of the leaf; when the leaves fall which occurs at a medium date, they are of a yellowish color.

Fruit.- Clusters one or two on the average, carried rather high up on the shoot, large, cylindrical, very long, narrow, sometimes winged but more often shouldered and with an abortive tendril, loose, clearing up in color; peduncle large, long, of a dirty brown, well lignified at maturity; stem ^{amongst the} ~~cut from~~ grapes, of a green color, with very short branches; pedicels of medium length, green and with a prominent swelling at the point of insertion, warts not common, but very visible, pencil colorless, short and large, very adherent to the berry.- Berry medium to below, round or slightly ellipsoidal, slightly crowded, greenish and pink in sun; bloom very abundant; umbilicus central and well marked by the persistent stigma; skin thick without being leathery, clear and elastic; flesh juicy and sweet; juice clear, abundant and fragrant when mature which comes between the first and second period; boquet characteristic and not disagreeable, this boquet is that of the Muscat Madiera which is very distinct from the usual foxiness of labrusca; seeds one to two to the berry, of medium size and grayish color.

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teeth angular, narrow and sharp pointed, ribs and veins

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SYNONYMS.- Paign's Isabella, Woodward, Christie's Improved Isabella, Payne's Early, Sanborton (?) (Bush et Meissner).- Captraube, Black Cape (Hermann Goethe).- Raisin de Cassis, UvaFragola, Raisin Fraise (Rovasenda).- Garber's Red-Fox (cav. Agazzoti).- Raisin Framboise (Champin).- Alexander, Raisin du Cap, Constantia, Schuylkill (?), Schuyl Kill, Sainte-Helene, Isabelle d'Amerique (Pulliat).- Cape, Framboisier (Valais, d'apres A.Berget).- Champania (Bulgarie, Viala).

HISTORY AND GEOGRAPHICAL AREA.- The Isabella is an American direct producer which was introduced into Europe earlier than any other sort. It had been cultivated to a certain extent even before the phylloxera period. Some authors have supposed that this labrusca variety originated in Europe and that it was carried to the new world only after a wide and profitable culture in our vineyards. In spite of the existence of two varieties of the labrusca in the collections of our botanical gardens this hypothesis has little to recommend it. There are no precise descriptions of it in the texts and it has never been described in the writings of our older botanists nor do they refer to it in any way. It does not seem possible that it could have been in our scientific establishments or it certainly would have been mentioned in their records. It is much more plausible and more logical to credit the origin of this form of labrusca to the native home of the labrusca, that is to say, America.

Bush and Meissner credit the Isabella to South Carolina. This seedling of Labrusca was later taken into the northern portion of the United States. In 1816 William Prince, who secured this variety from Mrs. Isabella Gibbs, for whom it was named, called the attention of grape growers to this sort in his catalogue. According to the Duchess* de Fitz-James on the contrary it was Prince who sent to ^{the} ~~the~~ ^{Mrs. Gibbs} ~~her~~ ^{her} mother this variety. He planted it in Brooklyn in New York in ~~the~~ ^{her} garden ~~of Mrs. Isabella Gibbs with the understanding that it was to be his property.~~ ^{and named it after her} Whatever may be said as to

this dispute there is no question but that this was propagated first by Prince and Mrs. Gibbs. Its culture extended very rapidly in America. Its great productiveness was the means of its being very quickly adopted in the eastern portion of the United States. In the west its cultural faults, its unevenness in ripening and its susceptibility to mildews and different rots stopped its spread. In Virginia and Georgia it was the most popular and was there cultivated for the greatest length of time. However it has been almost totally abandoned on account of the newer sorts of superior quality which have been obtained by American hybridizers.

In good time this variety was introduced into Africa, Asia and Europe. It was known at first as simply a curious plant to be recommended only for amateur's collections, and then later it became known as a wine grape which was resistant to Oidium. It was thus characterized by Dr. Sauvaigo at Nice in 1835 and in Algeria six years later. The propagation of this variety at the Cape of Good Hope in the famous Constance vineyards came at an earlier date. In France, Italy, Portugal, Roumania and Bulgaria this variety was soon received with favor on account of its slight resistance to Oidium. It is necessary in order to understand what took place in the period between 1850-1860 to appreciate that this was a period of poor cattle and that European viticulture had been terribly tried by the American Erisyphe and that it was due to these conditions that the viticulturists deprived of their customary crops, were so foolish as to greet with enthusiasm the Isabella which at least produced a wine, although it was of indifferent quality and very foxy. According to Prof. Cavazza the Isabella was introduced into Italy directly from America by one of the growers of Mergozzo, on Lake Maggiore. The proceedings of the Bologna Agricultural Society, however, show that this importation was at a much earlier date, probably 1825 or 1830. In Tuscany, ^{the} marquis Ridolfi, a large owner in the outskirts of Florence, did not hesitate to cut off many hectares of vinifera varieties and graft the Isabella thereon. In the second year after this operation he harvested 860 hectoliters of wine, which the non-fastidious palates of the Italian peasants accepted very readily. The example being set, the neighbors imitated it and Piedmont, Venice, Lombardy and the county of Nice were covered with Isabellas; but it was in Lombardy that its culture was most extensive. The Italian emigrants took care to place in their modest stock of goods cuttings of this precious variety and by them it was thus disseminated to the four corners of the earth. In Brazil particularly it made the fortunes of the colonists who consequently esteemed it very highly. In France

In France the Isabella is highly spoken of in many society meetings and in spite of the condemnation of Cte Odart, who, like many another great man, had more authority after he was dead than when he was living, it is tried upon rather a large scale even upon good soils. It is thus that in Carbonieux and Medoc the planting of a vineyard of this variety excites no comment beyond the statement that the proprietor will after some years have the mortification of pulling it out. The value of the Isabella is very variable depending upon the section where it is raised. In the making of certain special wines, particularly muscates, cordials, with a high alcoholic content, (all products of warm countries), the Isabella has an accepted place; it is more than tolerated, one may indeed say, that it is sought after. * * * * *

P.205 In the Portuguese country, particularly in the islands of Azores and the Island San-Miguel, and even on the mainland of Portugal in the borders of Coimbre and along the shores of Douro in the soapy mica schists, which are terraced, according to M. Viala talk at the conference of Lyons the Isabella gives good and highly esteemed crops and the extension of its culture by grafting is increasing rather than diminishing. But in the central portion of Europe, in Switzerland as in France, this variety exists only as an old isolated vine in some arbor giving a pleasant shade in summer and sometimes in the fall a wine as bad as it is abundant. People often speak of the large vine in the Saumur ~~garden~~ garden but there are many others as for instance that which may be found at the Station of Bous - le - Saunier which covers the whole building and produces some years many thousands of grapes. ~~People often speak of the large stock.~~

COMPARATIVE AMPELOGRAPHY.- The Isabella is a seedling of Labrusca type and is a visible amelioration of the wild type in point of productiveness but it approaches the wild type very closely in general attractiveness, vigor and health. The Labrusca was described first by Linneaus, then by Michaux and finally by Bosc, the last two having studied the variety in the Carolinas and in the garden of the museum and the nurseries at Versailles. The Labrusca is very decorative on account of the abundance of its foliage and on account of the contrast between the deep green on the upper surface of the leaves and the reddish white and the tomentum below. The clusters have only a moderate number of berries, sometimes very large it is true since Bosc compares them with the walnut. It is a vigorous plant and in wet soils will grow to the top of the highest trees. The fruit is foxy. One finds in the Isabella most of the characters of the wild type of the labrusca; to such an extent is this true that in most of the collections in Europe the vines labeled labrusca are Isabella. It has rather pink and cottony buds, the leaves are slightly dentate, thick, and covered below with a thick down. The clusters very slightly shouldered, if at all, berries large, skin leathery, flesh pulpy, odor strange and peculiar reminding us of the raspberry, others of the strawberry and which by the Americans is called foxy (coming from fox, renard) from which we get our rendering of this word, foxé. One finds also in this variety the most characteristic character of the labrusca, the continuous tendrils, a character found in no other species.

The varieties of the labrusca have been classified into the northern and southern group. The Isabella belongs to the latter which is the less strong and hardy of the two. In spite of this its productiveness is very great. Shoots from buds on old wood will bear fruit. If a cane is pruned the remaining buds are inclined to multiply themselves and the shoots which result carry from three to four clusters. These clusters are large, more or less compact with large berries, sweet, but with an acid and foxy flavor, The juice is slightly colored, the pigment being located in the pellicle.

This strange flavor which is hardly disagreeable in the flavor of the Isabella explains a number of its synonyms such as fraise (strawberry), cassis (black currant), framboise (raspberry). The name of Constantia and Cap have been attributed to the fact that

P. 206 cuttings were sent from one of the provinces of Africa where this variety had been planted with a certain degree of success, these cuttings came directly from the Cape of Good Hope. The Precoce de Payne (Payne's Early) and the Isabelle ameliorée de Christie (Christie's Improved Isabelle) are given in certain ampelography as distinct varieties. But these selections are poorly fixed and do not seem to us sufficiently constant for separating from the parent ~~species~~ ^{varieties}. The Schuykill, synonymous with Isabella according to Andre Leroy and Pulliat; the Duchess of Fitz-James says is a different variety, a very old sort and a forerunner of the Isabella and Catawba. * * * * *

There are, according to Madame Ponsot, varieties of the Isabella having pink berries and others with white berries. We have never run across them. There are many seedlings of the Isabella, many of which reproduce the maternal characters in very striking forms. Of these seedlings which it is impossible to classify as sub-varieties there are Bogue's Eureka, Aiken, Baker, Brown, Cloanthe, Carter, Hudson, Louisa, Lee's Isabella, Pioneer, Nonantum, Trowbridge, Wright's Isabella, etc. Of the varieties which are slightly more distinct are: Adirondac, Eureka, Hyde's Eliza, Mary-Ann, To-kalon, Union-Village and Israella. This last, which was originated by Dr. Grant, is rather highly esteemed by Champin, who says in his catalogue that the Israella, a seedling of the Isabella, has been growing on his place for ten years, that it showed such vigor that he has often used it when he wanted a strong growing stock. In this connection it may be said that the great service ^{of the Isabella} as the parent of varieties consists in its having given birth to the Vialla, the favorite stock in Beaujolais. "The Vialla, says Prosper Gervais, is a hybrid of the Isabella and Clinton, originated by Laliman at Tourate close to Bordeaux. It was at first called the Tourate by Millardet who had studied it at Tourate. Later in 1875 it was named Vialla by Laliman himself in honor of the president of the Central Agricultural Society of Herault whom Laliman states, is a practical scientist showing an unequalled faith in the cause of American vines."

Used as a stock the Isabella has presented one very peculiar case. M. Jurie says that at Poligny (Jura), a root of the Isabella was grafted to Poulard and that it has transmitted to this graft some of the labrusca characters, particularly continuous tendrils, and shallower sinuses in the leaves, that is, it shows according to this observer a graft hybrid. As this is very rare, never having been observed in other stocks, we mention it here.

CULTURE AND WINE MAKING.- The Isabella, like the ancestral labrusca type, grows well in the woods. It loves to grow to the top of living trees, grow down again out along some branch and up another tree. It is thus that it is cultivated in Italy, a country best adapted to it, in Tuscany on maples and in Lombardy on mulberries. This is the high pruning described by Pliny and reproduced in so decorative a fashion in the frescoes of Pompeii. Many of the garlands are horizontal, many oblique, some in short curves, and some in long, but the principle is the same in all cases, to extend the leaf surface over as much area as possible. Thanks to this leaf surface the Isabella acquires considerable productiveness and ^{a great deal of} ~~sufficient~~ ^{vigor} health. It is in this manner that the Isabella is cultivated today around Nice, along the Saint-Laurent-du-Var route.

In the gardens and elegant villas the old dead, worm-eaten trees have wire run around them so the grape vines can grow over them and on these new supports the old vines make a rampant growth from one end of the trellis to the other.

Nice

The principal advantage of the Isabella for the Nicard and Piedmont grape growers is due to its resistance to the odium. Nothing can give an idea of * * * *

P.207 their apathy and aversion to sulphuring their vines. Dr. Guyot credits it to fatalism. They regard odium as a visitation from God and prefer to suffer rather than to fight it. The Isabella appeared as a natural solution for this difficult problem a means permitted and furnished by Providence for escaping the curse, and the poor people are content. The resistance of the Isabella was widely heralded at the beginning of the invasion of this Erisyphe through Europe. The agricultural society of Gironde in 1863 even tried grafting the vinifera on Isabella to see if the immunity of the Isabella could be transmitted to its graft. Naturally nothing came of it but certain grape growers of Medoc then obstinately planted some of the Isabella and made wine from the Isabella fruit.

The Isabella is rather susceptible to the mildew and the black rot but rather resistant to the anthracnose and very susceptible to Phylloxera. It ~~does not~~ ^{only} deserves to be classed as high as five in the scale of phylloxera resistance. Its great vigor was the cause of a mistaken idea in this connection at the beginning of the phylloxera invasion. "If you wish to escape the phylloxera", writes Planchon on August 24, 1871, "graft your vines upon the Isabella as the phylloxera are not nourished by this variety," but Planchon soon found how feeble the resistance of this variety was and admitted his mistake in an article in the Revue des Deux - Mondes of February 15, 1874. In soils which are suited to the Isabella it will live a long time in the presence of phylloxera. M. Froidefond stated in 1886, that vines of Isabella still resisted the phylloxera in the plantings at Souls in Gironde and at Aubignan close to Carpentras, the vine of M. Guillaume survived many years after the neighboring vinifera vines disappeared. Nevertheless the resistance, intermediate between that of the Othello and Canada, is in reality so slight that sooner or later ~~the phylloxera~~ will show its effects. Thus those sections which have become accustomed to this variety and desire to save it must, like Portugal, graft it on stronger roots. So far as we know at present it appears to make a good graft.

The adaptation of the Isabella is essentially that of the la-brusca; it requires deep rich alluvial non-calcareous soil. Such soils do not encourage phylloxera. ~~Such soils do not encourage phylloxera.~~ "The soils where this species grows naturally" says M. Vialla, "and where the varieties are cultivated with success are gravelly or red and sandy, coming often from the decompositions of granitic rocks. Thus the soils of New Jersey and those of the islands around New York City are composed of fine sand, very deep, fertile and new; those of Maryland are of red sand, fine, and very good holders of water. In Virginia, Pennsylvania; etc. the growing of varieties of this species is limited to neighborhoods with granitic soils which are very rich and where the soils are new and full of moisture". In dry and warm soils the Isabella loses its leaves in the month of August, just at the time when they are necessary for maturing the fruit, consequently the fruit often ripens incompletely and unevenly.

The vegetation periods as noted at Montpellier are as follows: buds burst from 20 of March to 6th of April; flowering period from 15th to 25th of May, fruit ripens September 2nd.

Its productiveness is irregular and variable depending upon the age and condition of the vines. In certain instances the crops are enormous and arouse the indignation of ampelographers who guard with jealous care the reputation of the vinifera. Thus Cte Odart says: "I agree with many of the grape growers of France who think that this grape with its flat black currant, medicinal taste is good for nothing, either for the press or for the table. * * * However, one cannot refuse to admit that this woods variety is very productive." Dr. Baretto writes * * *

P.208 from Brazil in 1888 "yes, indeed, we have this abomination - the Isabella, the horrible Isabella, which has reigned in our soil without rival until so recent a period as to be a reproach to us. This is the same Isabella which still makes the fortunes of the Italians who immigrated sometime since enmasse some time since into our country. They think only of what it brings in and according with their reports as to productiveness no other variety will compare with Isabella: vines ten or twelve years old on which one can count three or four thousand clusters. This is simply disgusting." Such colossal fecundity is rarely attained in Europe but in America it is said to be quite common. Another reason for the success of the Isabella in Brazil and elsewhere is on account of its considerable resistance to the gray rot of the fruit.

The first wine of the Isabella of which there is any record was made in Hermann in 1840 at Mr. Tuggers. Ainsworth cites in 1859 a vineyard at Rochester which paid \$1000 to \$1500 per acre. Rush of Bloomfield speaks of a third of an acre upon which a hundred vines of the Isabella produced 4000 pounds of fruit. The fruit of the Isabella is of beautiful appearance and is esteemed quite highly in America for the table. In Europe it is generally considered to be bad as is also the wine it produces, nevertheless when this wine is made from a good vineyard and has aged, it loses a portion of its characteristic aroma and becomes drinkable. I have tasted excellent wine of this variety at the house of M. Durandy, the President of the general council of the Maritime Alps. This was the wine of a good year and came from the best vineyard in the department of Bellet. Its perfume had been attenuated by ten years in the bottle and its ~~flavor~~^{flavor} deceived me into mistaking it for small bordeaux. This similarity of bouquet which makes the Isabella wine a caricature of that of Medoc has been noticed by the grape growers of Gironde. Many of them have planted between their vinifera vines Isabellas in order to give the wine of the mixed fruit the aroma of the Cabernet-Sauvignon. At the time when the Phylloxera was in France and before the time of grafting M. de Malfosse says that rows of Sainte-Helene (synonym of Isabella used in Southwest) showed green in the midst of the gray and yellow dying viniferas. This shows that the wine of the Isabella is not at all times and all places as bad as Odart pretends. Amongst the Canadian wines sent to the Universal Exposition of 1878 by the Association of Grape Growers of Toronto and by the firm of Hamilton Dunlop of Brandford there were some wines of the Isabella and these wines appeared to the judges to be far from bad.

Here is the average composition of the Isabella must in America:

Isabella Must.

Analysis by Prof. Jackson of Boston.

Source	<i>Specific Gravity</i>	% of sugar	Tartaric acid.
Pennsylvania			
Pennsylvania	1.0640	14.70	1.90

In Italy, according to documents which were obligingly placed at our disposal by Prof. Tamaro, the Isabella wine does not stand the heat of the summer well and will hardly keep * * * *
P.209 more than one year. To improve it in this respect its must is mixed with the must of southern viniferas before fermenting. / ~~The~~ Its average composition ~~there~~ is:

Alcohol	6½ to 8%
Acidity	6 " 7 grams
Dry matter	21 " 22 "

At the Montpellier school the Isabella has given 2½ kilograms 800 per vine; the average weight of a cluster being 122 grams. According to Prof. Bouffard the composition of the Isabella must and wine is as follows:

Isabella Must.

	1900	1901
Density at 15° C.	1069.1	1082.
Corresponding sugar (Salleron's table)	154.	188.
Corresponding alcohol	9°	11°
Sugar (per Fehlings liquor)		195.3
Total acid (in sulphuric acid)	5.97	3.16

Isabella Wines.

	1900	1901
Density at 15° C.	998.5	997.6
Alcohol	7.5°	9.9°
Extract at 100°		24.1
Dry extract : Houdart	18.30	23.80
Extract: vacuum method	24.	
Total acid (in H ₂ SO ₄)	6.15	5.92
Possible cream tartar (Berthelot method)	2.82	
Soluble ash	1.2	1.60
Insoluble ash	0.16	0.38
Total ash	1.36	1.98
Alkalinity of ash (in K ₂ CO ₃)	0.98	1.26
Alkalinity ^{of ash} estimated in tartar	2.7	3.43
Acidity of tartar corresponding to K ₂ CO ₃	0.7	0.89
Intensity of coloring compared with Aramon wine		3.

REMARKS: Wine quite alcoholic with marked acidity, chemical composition similar to vinifera, characteristic foxy taste, color somewhat intense (3 aramons), of pink shade, bottles appear yellow in the air.

The brandy of Isabella is very fragrant and the inhabitants of the Azores use it for the manufacture of an article which is of considerable commercial importance. It resembles slightly certain fruit brandies, particularly that of the prune and is similar to the Slavovitzza of the Russian country. They ship this to Holland where it is used for the manufacture of liquor confections which are credited to the Cape.

DESCRIPTION: Vine vigorous, of open spreading appearance; trunk large; old bark slightly adhering, raised and cracking into narrow irregular strips.

Buds downy, yellowish white with pink edges, covered with brown hairs on the scales which persist for a long time; young leaves slightly figured and golden in color on the upper surface, washed with bright pink below, veins carrying rather dense rusty hairs, leaves flatten rather early; flower clusters open in succession, green in color with a wine colored terminal, emerging very rapidly from below the down of the scales which covers them.

P.210 Canes long and slender, straight, tending to angularity, and rugose, covered with light bloom at the nodes; young shoots cobwebby, of a yellowish green or dirty pink color, with scattering long hairs; canes of late summer of a violet brown, lighter in color at the ^{inter} nodes and deepening at the nodes; internodes rather long, finely striated with shallow irregular grooves; nodes flattened; tendrils continuous, long, greenish, and slightly cobwebby.

Leaves large to very large, broader than long, thick, three lobed; lateral sinuses shallow; basal sinus deep opening in a narrow

V and sometimes closed with the lips of the leaf overlapping; plane of the leaf figured and blistered at the center, smooth along the edges, glabrous on the upper surface, with a dull brownish rather deep green, considerable white cottony tomentum; teeth round, very large, strongly acuminate in two very distinct series; veins light green above, very prominent below with wooly hairs.- Petiole long and strong, greenish washed in carmine with occasional patches of rather thick supple hairs, making a right angle with the plane of the leaf; leaves falling early.

Fruit. Clusters three or four to the cane, size medium or above, cylindrical, roundish at the extremity, loose and shortly winged; peduncle short, ligneous at point of insertion and of medium size; stem down amongst fruit green; pedicels green, slender, rather long, warty, with a flattened and enlarged terminal; pencil long and winecolored and slightly adhering to berry.- Berry above medium, almost globular, slightly oval, rarely with an immature berry, of a deep purple color, almost black when thoroughly ripe but more often reddish, covered with an abundant bloom; umbilicus central; stigma persistent; skin thick, leathery, harsh and acid to the taste; flesh pulpy, with a very pronounced foxy aroma; juice slightly tinted with red, of a wild foxy flavor; seeds from one to four, large, rough with a short beak, chalaza and raphe absent, in place of which there is a very distinct circular depression.

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